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Oil & Gas ACTIVITY on PUBLIC LANDS



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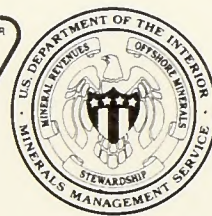
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OIL AND GAS ACTIVITY ON PUBLIC LANDS
IN THE UNITED STATES AND WYOMING



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OIL AND GAS ACTIVITY ON PUBLIC LANDS IN THE UNITED STATES AND WYOMING

Summary

Oil and gas production from Federal and Indian lands remains an important part of the nation's need to have sufficient, secure, domestic mineral resources. A U.S. government agency, the Bureau of Land Management, provides an important role for supervising and managing all onshore exploration, development, and production operations that occur on Federal and Indian lands. The majority of onshore oil and gas production and revenue on public lands occurs from two BLM Administrative States, New Mexico and Wyoming. The decline of oil and gas activity on public lands since 1986, has severely impacted revenues generated from Federal and Indian oil and gas leases. Oil and gas revenues from public lands increased significantly in 2000 due to rising product prices. The U.S. trends in oil and gas production (oil declining, gas increasing) mirrors the trends of oil and gas activity on public lands in Wyoming.

Introduction

As the Nation's principal conservation agency, the Department of the Interior (DOI), through its Bureaus, has responsibility for most of the nationally owned public lands and natural resources. The Bureau of Land Management (BLM) is responsible for managing more than 262 million acres of public lands (1/8th of the land in the U.S.) and close to 700 million acres of subsurface mineral resources. The Mineral Leasing Act of 1920 provided for leasing, exploration, and production of selected mineral resources such as oil, gas, coal, and other mineral resources. The main objectives of BLM's fluids (oil and gas) program is to foster a fair return to the public for its resources, ensure environmentally acceptable activities within the program, and provide for conservation of the fluid mineral resources without compromising the long-term health and diversity of the land. The BLM also has a trust responsibility for all Indian tribal lands and all Indian allotted lands (except for the Osage Reservation lands and individual allottees whose restrictions have been lifted). This trust responsibility authorizes the BLM to supervise and direct operations under oil and gas leases, furnish scientific and technical information advice, and to ascertain and verify the amount of production. In essence, BLM's fluids program is primarily concerned with the approval and supervision of industry operations. BLM, headquartered in Washington, D.C., has 12 State Offices located in Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Wyoming, and Springfield, Virginia (Eastern States Office). Another DOI agency, the Minerals Management Service (MMS), determines, collects, and distributes revenues associated with the production of minerals extracted from Federal and Indian lands.

Discussion

U.S. and Worldwide Oil/Gas Activity

The amount of oil and gas activity on Federal and Indian lands in the U.S. remains an important part of the nation's economic security and the strategies necessary to increase domestic production. Worldwide oil production continued to decline in 2001 (Fig. 1) after sustained yearly increases earlier in the 1990's, due to generally weak economic conditions and decisions in 2001 by OPEC and other countries to cut oil supply in hopes of raising depressed oil prices. The U.S. provided about 9% of the estimated worldwide oil production in 2001 (Fig. 2). The top ten countries in worldwide oil production (Fig. 3) accounted for 61% of the world's estimated oil production in 2001. In the U.S. the number of producing oil wells (Fig. 4) is estimated at 539,754 or 65% of the total producing oil wells worldwide. Even with the large amount of producing oil wells, U.S. oil production has continued to decline since 1987 (Fig. 5) averaging about 5.8 MM barrels per day in 2001. U.S. oil production by State in 2001 indicates seven States produce over 91% of the nation's oil (Fig. 6). Worldwide gas production has continued to steadily increased since 1984 (Fig. 7) with the U.S. accounting for approximately 24% of worldwide gas production (Fig. 8). U.S. gas production increased 23% between 1986-1996 but has leveled off since 1996 (Fig. 9). Texas and Louisiana accounted for 57% of the marketed natural gas production in 2002 (Fig. 10).

U.S. rotary rig activity in the early 1990's had declined over 70% since the peak year in 1981 (Fig. 11), with a slight increase from recent depressed levels seen in 1999. Although movement in the rig count is primarily determined by exploration and development spending, other factors may be impacting recent statistics. U.S. oil and gas well completions (Fig. 12) has mirrored the rotary rig activity and was at its lowest level in 1999 (since 1970) before rebounding slightly in 2000-01. Texas dramatically led all States again in 2001 for oil and gas wells drilled (Fig. 13) accounting for 25% of the wells drilled. Two States (Texas and Wyoming) accounted for 39% of the total estimated oil and gas wells drilled (onshore and offshore) in the U.S. in 2001. U.S. average wellhead oil and gas prices (Fig. 14) are stable, although oil and gas prices jumped dramatically in late 2000 due in part to the California energy crisis. Spot oil prices are double in 2001 from depressed levels seen in 1998. The 2001 average oil price is currently in the low-twenties. The chart of U.S. proved reserves (Fig. 15) indicates while oil reserves have continued to slowly decline, gas reserves have shown a marked increase since 1999. A chart of annual yield rates based on 10-year government securities (Fig. 16) showed surprisingly similarity to oil prices until recently. Interest rates dropped dramatically in 2001 to levels not seen since 1966 reflecting weak worldwide economic conditions.

Federal and Indian Lands Production and Revenues

According to the latest MMS Mineral Revenues report (2000), oil and gas production from Federal and Indian lands accounts for 32% and 36% respectively, of the total U.S. production (Fig. 17). The percentage of Federal mineral production (Fig. 18) as compared to total U.S. mineral production has risen steadily for oil, gas, and coal since 1980. Revenues generated from Federal and Indian mineral leases in 2000 come from offshore (73%), onshore (23%), and Indian lands (4%) (Fig. 19). In 2000, 59% of the nation's onshore Federal and Indian mineral revenues resulted from oil (16%) and gas (43%) production (Fig. 20). Coal royalties (20%), bonuses (8%), rents (3%), other revenues (4%), and other royalties (6%) contributed the rest of 2000 onshore mineral revenues.

Royalties from onshore Federal and Indian mineral leases result from the trends in oil and gas well activity. Onshore oil royalties from Federal and Indian mineral leases rebounded in 2000 doubling 1999 figures due to strong oil prices (Fig. 21). Wyoming (33%), New Mexico (26%), and California (21%) produced 78% of the 2000 oil production from Federal onshore mineral leases (Fig. 22). Onshore gas royalties increased 66% in 2000 (Fig. 23), reflecting increased natural gas production and stronger gas prices. New Mexico (52%) and Wyoming (34%) accounted for the majority of 2000 Federal onshore mineral lease gas production (Fig. 24). Together, Wyoming and New Mexico account for 59% of the Federal oil production and 86% of the Federal gas production, resulting in Federal oil and gas royalties of \$800 MM in 2000 or 82% of the total Federal oil and gas royalties received (Fig. 25). Historically, oil and gas production from Wyoming and New Mexico has generated 2-3 times as many Federal oil and gas royalties than any other (BLM Administrative) State. Federal and Indian oil and gas lease revenues are continually subject to U.S. and local government policy and regulations, and to market forces impacting the price of the commodities.

Revenues collected in 2000 from mineral leases (oil, gas, coal, etc.) on onshore and offshore Federal and Indian lands were distributed to the States, the U.S. Treasury, and to a number of designated special purpose accounts administered by Federal agencies. Formulas for these disbursements are governed by legislation and regulations. The States receive 50% of all royalties, rents, and bonuses generated from oil and gas leases on public lands. Forty (40) percent of the remaining oil and gas revenue is deposited in the Reclamation Fund, and 10% is directed into the U.S. Treasury. Over half of the 2000 Federal and Indian mineral revenues collected (66%) will go to the U.S. Treasury, 11% to the Land & Water Conservation Fund, 11% to the States, 7% to the Reclamation Fund, 2% for the Historic Preservation Fund, while the Indian Tribes and Allottees will receive 3% of the total funds collected. Disbursement of oil and gas royalties and other revenues from Federal onshore mineral leases totaled \$968 MM in 2000 (Fig. 26). Six western States (New Mexico (48%), Wyoming (34%), Colorado (4%), Utah (4%), Montana (4%), and California (3%)), receive 97% of the funds distributed.

As of December 31, 2000, there was approximately 23,844 Federal and Indian producible (actual and allocated production) oil and gas leases (Fig. 27). The number of acres associated with these producible leases has varied little since the early 1980's (Fig. 28). Of the total Federal and Indian producible leases as of December 31, 2000, New Mexico (27%), Wyoming (26%), Colorado (9%), Utah (8%), and Montana (7%) account for 88% of the total (Fig. 29).

Public Lands Oil/Gas Activity

BLM has the authority to issue mineral leases on about 600 million acres of public lands, including national forests and private lands where mineral rights have been retained by the Federal Government. The surface of many of these lands is managed by other Federal agencies, such as the U.S. Forest Service, the Department of Defense, the Bureau of Reclamation, and the General Services Administration. Close coordination with these agencies is necessary prior to leasing to ensure that potential development activity is in the public interest.

Oil and gas leases under supervision on public lands (Fig. 30) rose dramatically in the 1950's but has dropped significantly since the oil price collapse in the mid 1980's. The percent of producing oil and gas leases on public lands since 1920 (Fig. 31) has increased significantly since the mid-1980's primarily as a result of stable lease production and fewer leases in effect. The drop in oil and gas leases in effect on public lands may be due to changing market conditions forcing industry to reduce the number of exploratory leases in their inventory or the lack of interest in areas with known low or no oil and gas potential.

When a lease or a portion of a lease cannot be independently developed and operated in conformity with an established well spacing program, the BLM may approve a communitization agreement (CA) for such lands with other Federal or non-Federal land, if determined to be in the public interest. Unit agreements (UA) have some similarities to CA's in that they are established to pool the interest of several parties and allocate the production and royalties from the committed Federal, State, and private lands. Unitization provides for the efficient and economic development of a geologic prospect by providing for the efficient drilling of wells, allowing operations to be delegated to one operator, providing for Federal lease extensions or benefits, and reducing the risk of environmental damage. Unit agreements are established by operators to combine interests of several parties and allocate the production and royalties from committed Federal, State, and private lands. The number of Federal oil and gas agreements has climbed steadily since the 1930's (Fig. 32).

After a lease is issued, BLM is responsible for supervising and managing all exploration, development, and production operations that occur on Federal and Indian lands. In order for the operator to perform work on a lease, an application or proposal is submitted for approval. To drill a well, an Application for Permit to Drill (APD) must be submitted to BLM for review and approval. The number of oil

and gas drilling permits approved by BLM has remained relatively steady since 1986, but 2000-2001 experienced a strong increase from 1999 levels (Fig. 33) due in part to strong oil and gas prices in late 2000 and the continuing development of coalbed methane on Federal lands. In FY 01, BLM approved 4,472 APD's with 69% of the approved APD's from Wyoming and New Mexico (Fig. 34). New oil and gas hole starts on public lands (Fig. 35) have increased since the oil price collapse in 1986, with 2000 new hole starts at historically high levels. Since the late 1970's there have been three major peaks of activity for new hole starts (1981-82, 1992, and 1998-00) due respectively to strong product prices, the expiration of tax credits for qualifying wells spudded prior to December 31, 1992, and coalbed methane development in the late 1990's. Total Federal oil and gas new hole completions on public lands have varied since the 1970's (Fig. 36). There are approximately 58,629 well completions on Federal lands as of EOFY 00 that are classified as producible or service (usable) completions (Fig. 37). Mineral revenues accounted for the majority of revenues generated from public lands (Fig. 38) in FY 99.

BLM Wyoming Oil\Gas Lease and Operations Activity

BLM's management of the fluids program accomplishes several functions in support of the major objectives including: 1) supporting the domestic need for energy resources, including oil and gas, 2) making eligible lands available for leasing through proper planning, 3) timely processing of applications and notices for exploration and development, 4) conducting inspections of operations and ensuring compliance with lease terms, 5) protection of Federal/Indian oil and gas resources from potential drainage, and 6) diligent development for undeveloped Indian leases. The fluids program guidance is supported from many sources including Federal laws, regulations (primarily the 18, 25, 30, 36, 40, and 43 CFR's), Onshore Orders 1 through 7 (for operational approval), BLM program guidance (Manuals, Handbooks, NTL's), and WO policy guidance (memorandums, directives, IBLA decisions). BLM reviews all applications to conduct operations and other related proposals to ensure technical competence and that due consideration is given to resource conservation and environmental protection.

The fluids program can be broadly categorized into several functional areas including operational activity (applications, lease operations, lease/well status), reservoir management (agreements, drainage protection), inspection and enforcement (I&E), planning and policy, Indian trust responsibility (diligent development, oversight/guidance), and leasing.

The MLA of 1920, as amended by the Federal Onshore Oil and Gas Leasing Reform Act (FOOGLRA) of 1987, provided that all available public lands must first be offered through a competitive leasing process. Those parcels not sold competitively are then available noncompetitively for two years. Some of the major oil and gas lease terms and conditions include a 10-year lease term, a 12 1/2 % royalty rate, and a rental rate of \$1.50/acre/year for first 5 years and \$2.00/acre/year thereafter.

Statistics dating from 1967 highlight the activity of oil and gas leasing in Wyoming on public lands. The Federal Leasing Reform Act (LRA) of 1987 stipulated that all public lands would be initially offered for competitive oil and gas bidding, resulting in more competitive leases being issued than noncompetitive leases. Lease sale results in Wyoming appear to be impacted by various factors including the location of the parcel, whether the parcel was publicly nominated for sale (a requirement for BLM Wyoming leases sales since August, 1996), ongoing activity adjacent to parcel offerings, and to a lesser degree current oil and gas prices. Bonus bids received from BLM Wyoming competitive lease sales since 1979 appear to be somewhat cyclical in nature.

The total number of oil and gas leases under supervision in Wyoming has dropped 50% since the mid-1970's to a FY 00 level of 20,188 leases (Fig. 39). This equates to a leased acreage total of approximately 14,039,281 acres (Fig. 40). Despite ongoing drilling activity, the oil and gas leased acreage under supervision in Wyoming has dropped substantially since 1986 possibly reflecting the cost and risk of developing acreage at lower oil and gas prices, or the lack of interest in acreage considered to have low oil and gas potential. The number of oil and gas leases competitively issued by BLM Wyoming has held steady since the Leasing Reform Act of 1987 (Fig. 41). However, the corresponding annual leased acreage in BLM Wyoming has dropped since the mid-1980's (Fig. 42).

Bonus bids for oil and gas competitive leasing received by BLM (excluding FY 99 Alaska NPR lease sales) in FY 01 totaled \$60.5 MM (Fig. 43) with BLM Wyoming accounting for 70% of the total.

Results of BLM Wyoming's oil and gas competitive lease sales has varied since oral auctions began with the March, 1988 lease sale required by the LRA of 1987. Although the number of parcels offered has decreased since 1988 (reduction of parcel backlog, more extensive effort to review lease stipulations, and limiting the length of the lease sale to 1 day), the number of parcels receiving bids has been relatively steady. In FY 01, BLM Wyoming offered 1023 parcels and received 933 bids in the oil and gas competitive lease sales (Figs. 44 and 45), totaling \$34 MM. Since August, 1996, when BLM Wyoming only offered parcels nominated by industry, the percentage of parcels sold (bid) at the competitive oil and gas lease sales has generally been 80% or higher (Fig. 46). There has been a strong uptrend in the bids received per acre leased, which may be significantly influenced by a change in lease terms by BLM (October, 1992) requiring all competitively issued leases to have a 10-year term instead of a 5-year term. This longer term allows lessees more time to evaluate the oil and gas potential of the lease. The \$/acre sold at the BLM Wyoming oil and gas competitive lease sales has doubled since 1996 (Fig. 47) but has fallen recently. Receipts due from the BLM Wyoming lease sales (Fig. 48) saw a marked increase in 1997, 1998, and 2001 related in part to industry interest in coalbed methane development potential, but has since dropped to historical levels.

The level of oil and gas activity on Federal and Indian lands in Wyoming was severely impacted by the decline in oil prices that occurred in early 1986. The number of APD's approved in BLM Wyoming (1,917) in FY 01, an indicator of drilling activity on Federal and Indian lands, has rebounded from a low in 1991, and increase rapidly since 1999 (Fig. 49). It is anticipated the number of approved APD's in BLM Wyoming will continue to rise in FY 02 and beyond due to coalbed methane development ongoing in the Powder River Basin in northeast Wyoming. In FY 2001, the BLM Buffalo field office accounted for 58% of the APD's approved in BLM Wyoming (Fig. 50). A review of the total producible and service well completions over the last 10 years reveals an increase in the number of producing gas wells (southwest Wyoming and recent coalbed methane development) and a slight decrease in the number of shut-in oil wells as oil prices rise above post-1986 levels (Fig. 51). The total number of producing oil well completions in Wyoming on Federal and Indian lands has decreased 20% since FY 85 (Fig. 52), but may be stabilizing due in part to Federal regulations effective October 1, 1992, providing Federal royalty relief on stripper (less than 15 BBLs/Day) oil wells and Federal regulations effective March 11, 1996, providing Federal royalty relief for oil produced with a weighted average gravity of less than 20 degrees API. The strong rebound in oil prices in 1999 and 2000, may help stabilize the producing oil well completions in BLM Wyoming.

The volumes of oil and gas produced from Federal lands in Wyoming since 1980 has differed, with gas (and coal) volumes rising substantially while oil volume has dropped almost 40% (Fig. 53). For CY 2000, oil royalties amounted to about \$97 MM (Fig. 54) and gas royalties from Federal lands in Wyoming amounted to \$233 MM (Fig. 55). A chart of Federal mineral royalties in Wyoming (Fig. 56) shows a rise in oil royalties in 2000, an increase in coal royalties, and a sharp increase in gas royalties (due to higher gas prices in 2000).

State of Wyoming Oil/Gas Activity

The level of oil and gas activity on Federal lands in Wyoming is also important to the State of Wyoming since approximately two-thirds of the mineral ownership in Wyoming is Federal or Indian minerals. A chart of yearly oil and gas production since 1916 (Fig. 57) clearly shows the trends of oil and gas development in Wyoming. The trends in oil and gas production in the State of Wyoming have clearly been divergent over the last two decades. Annual gas production in Wyoming (Fig. 58) has quintripled since the 1970's and can be attributed to a number of factors including new large gas field discoveries over the last 15 years (Overthrust Belt in southwest Wyoming), more important technology gains in industry for gas than oil (coalbed methane, tight gas formations), pipeline expansion to new markets, and recent national emphasis on the production of natural gas. The yearly production of oil since 1970 in Wyoming (Fig. 59) has been on a significant downtrend (2000 production is almost 1/3 of 1970 production levels) reflecting not only low oil prices, but the aging of Wyoming's oil fields, the lack of new large oil discoveries, and the poor market conditions inhibiting significant contributions from enhanced or secondary recovery oil projects.

The number of oil and gas producers has been relatively steady over the years, despite the upheaval in product prices since 1986 (Fig. 60). According to the Wyoming Oil and Gas Conservation Commission (WOGCC) there were 10,514 approved drilling permits in 2001 (Fig. 61) with Campbell County accounting for 66% of the approved permits (Fig. 62). Pertaining to 2000 gas production in Wyoming, almost 58% of the gas was produced by six operators. Three operators (ExxonMobil - 18%, BPAmoco - 12%, and Chevron - 11%) accounted for 41% of the total gas produced (Fig. 63). Eight operators account for 52% of the 60.5 MM barrels of oil produced in Wyoming in 2000 (Fig. 64). Marathon, the largest oil producer, accounted for 18% of the oil produced in Wyoming in 2000.

Sublette County, Wyoming in southwest Wyoming is the State's largest gas producer, while Campbell County, Wyoming located in the Powder River Basin is the State's largest producer of oil (Fig. 65). Seven gas fields/regions in Wyoming account for over 50% of the gas produced in Wyoming with Fogarty Creek gas field the largest (Fig. 66). Oregon Basin oil field, located in the Bighorn Basin in northwest Wyoming, is the State's largest producer (Fig. 67). The Frontier formation contains the State's largest number of producing oil and gas wells (Fig. 68). The proved reserves estimated in Wyoming since the mid-1970's shows an uptrend in gas reserves but a downtrend in oil reserves since the mid-1980's (Fig. 69). A plot of monthly oil and gas prices in Wyoming markets since 1986 (Fig. 70) indicates that contrary to common perception, prices do not necessarily trend in the same direction. Gas prices regularly peak during the winter months related to seasonal demand, while oil prices have generally remained below \$20 per barrel except for the Iran crisis in late 1990 and the California energy crisis in 2000. Oil prices in the U.S. market have returned to normal levels in 2001 due to reduced worldwide demand.

Coalbed methane (CBM) is natural gas or methane that occurs in coal beds and has been generated during the conversion of plant material to coal. Coal beds serve as both the source rock and reservoir rock. Gas storage in coal beds is more complex than in other conventional reservoirs like sandstone or carbonate. Once the gas leaves the coal beds, it is no longer considered coalbed methane.

Coalbed methane in the Powder River Basin (PRB) in northeast Wyoming is one of the largest accumulations of natural gas in North America. The CBM plan in the PRB occurs on Federal, Fee (private), and State owned lands. Much of the development takes place on split estate lands, where the surface owner is different from the mineral owner (i.e. private surface, Federal minerals). Drilling on Federal lands has slowed since 1999 because of moratoriums on well permitting, awaiting completion of various environmental studies that must be completed before further development on Federal lands can proceed.

A chart on annual oil and gas production in the PRB shows steadily declining oil production but a sharp increase in gas production from accelerating CBM development (Fig. 71). Recent figures indicate CBM production to be over 20 BCF

per month (October, 2001) with Fee, Federal, and State production at 70%, 22%, and 9%, respectively (Fig. 72). As of September, 2001, there were approximately 7,491 producing CBM wells, and 2,983 shut-in CBM wells, many waiting on pipeline hookup (Fig. 73). CBM production is currently averaging 92 MCF/well/day and 188 BBL/well/day with average water production beginning to decline as coalbed dewatering continues (Fig. 74). There were approximately 10,711 completed CBM wells with 82% of the wells State or Fee mineral ownership (Fig. 75). The percentage of Federal CBM production has been constrained due to drilling moratoriums but has recently broken above 20% of the total CBM production (Fig. 76). A table of the CBM activity in Wyoming as of January 4, 2002, provides information on permit and well completion activity (Fig. 77).

Conclusions

Public lands in the U.S. and Wyoming continue to rebound from the declines experienced in oil and gas activity over the last decade. The drop in oil revenues received from public lands since the mid-1980's has started to recover to prior levels as evidenced by the increasing number of authorized Federal leases, approved APD's, and producing Federal leases. Gas revenues have increased significantly in the late 1990's due to increased production and product price. A majority of onshore oil and gas production and revenues on public lands occurs from two (BLM Administrative) States, Wyoming and New Mexico. Federal lands in Wyoming have seen a significant drop in new well starts, fewer exploratory (wildcat) wells being drilled, and a decrease in the number of producing oil wells despite recent royalty relief for low volume and heavy oil producing oil wells. The overall trends in oil and gas production (oil declining, gas increasing) on onshore public lands mirrors the oil and gas activity in Wyoming. Gas production in Wyoming has increased from recent large gas field discoveries, an expanding infrastructure (pipelines), ongoing coalbed methane development, and rising demand for natural gas, while the slow decline in oil production from aging oil fields and low volume contributions from enhanced oil recovery projects continues to depress oil revenues.

Nomenclature

AFMSS = Automated Fluid Minerals Support System
APD = Application for Permit to Drill
BCF = Billion of Cubic Feet (Gas)
BLM = Bureau of Land Management
BBLs = Barrels
CBM = Coalbed Methane
CFR = Code of Federal Regulations
CY = Calendar Year (Jan. 1 - Dec. 31)
DOI = Department of the Interior
EIA = Energy Information Administration
EOFY = End of Fiscal Year
ESO = Eastern States Office
FOOGLRA = Federal Onshore Oil and Gas Leasing Reform Act
FY = Fiscal Year (Oct. 1 - Sept. 30)
IBLA = Interior Board of Land Appeals
MBBLS = Thousands of barrels per day
MM = Millions
MMS = Minerals Management Service
NPR = National Petroleum Reserve
NTL = Notice to Lessee
OGJ = Oil & Gas Journal
QFMR = Quarterly Fluid Minerals Report
OPEC = Organization of Petroleum Exporting Countries
SN = Sundry Notice
USGS = United States Geological Survey
WO = Washington Office
WOGCC = Wyoming Oil and Gas Conservation Commission
\$MM = Millions of dollars

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Appendices

BLM State Offices (and their Administrative Boundaries)

Alaska, Arizona, California, Colorado, Eastern States (Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Minnesota, Michigan, Mississippi, Missouri, New York, North/South Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, Wisconsin), **Idaho, Montana** (Montana, North/South Dakota), **New Mexico** (New Mexico, Kansas, Texas, Oklahoma), **Nevada, Oregon, Utah, and Wyoming** (Wyoming, Nebraska).

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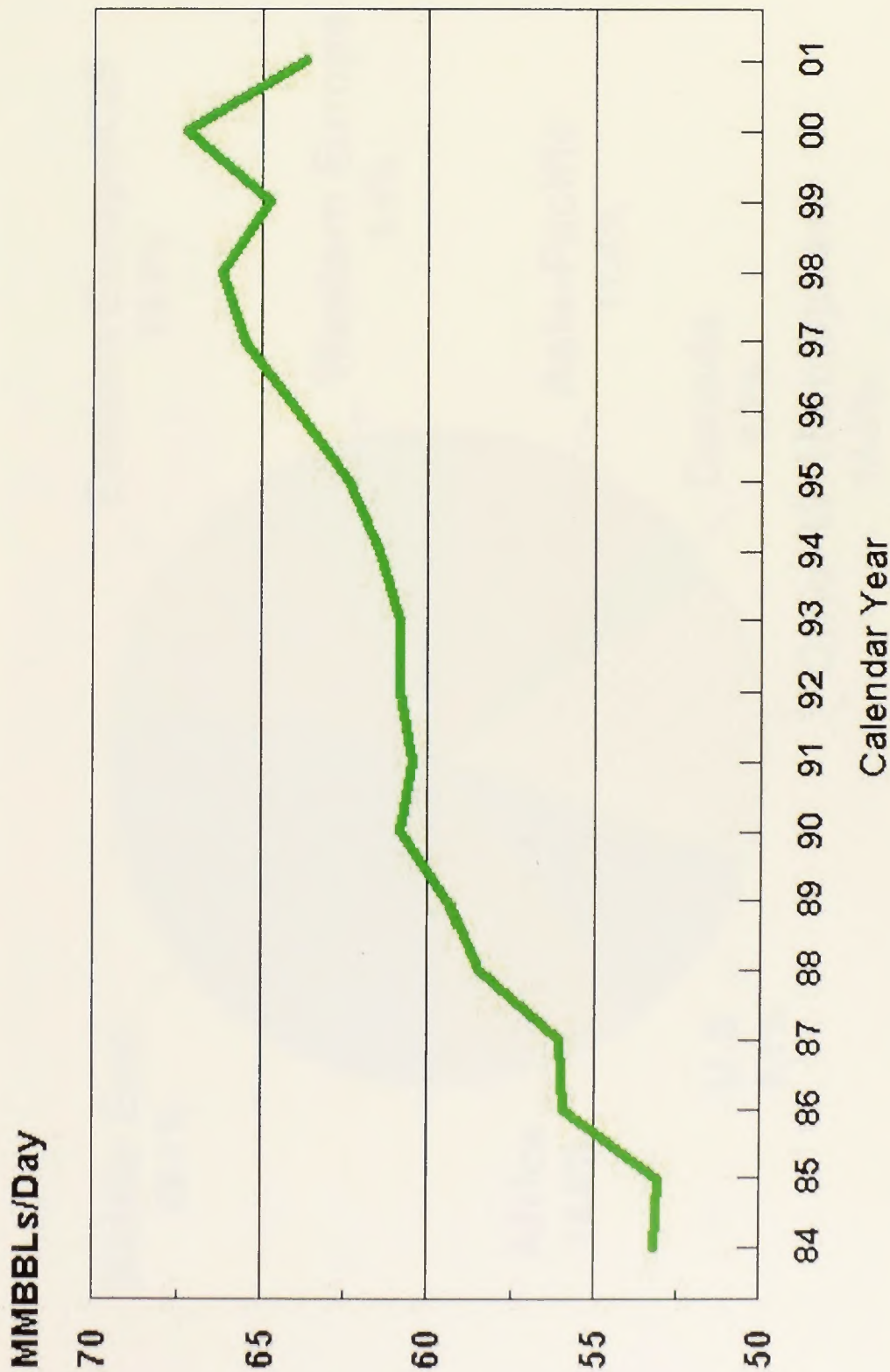
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- Fig. 60 - Number of Wyoming Oil/Gas Producers
- Fig. 61 - Number of Wyoming Drilling Permits Approved
- Fig. 62 - Approved Wyoming Drilling Permits By County
- Fig. 63 - 2000 Wyoming Gas Production By Operator
- Fig. 64 - 2000 Wyoming Oil Production By Operator
- Fig. 65 - 2000 Wyoming Oil/Gas Production By County
- Fig. 66 - 2000 Largest Wyoming Producing Gas Fields
- Fig. 67 - 2000 Largest Wyoming Producing Oil Fields
- Fig. 68 - Wyoming Oil/Gas Wells Producing By Reservoir
- Fig. 69 - Wyoming Proved Reserves
- Fig. 70 - Wyoming Monthly Oil/Gas Prices
- Fig. 71 - Wyoming Powder River Basin Oil/Gas Annual Production
- Fig. 72 - Wyoming Coalbed Methane Monthly Production
- Fig. 73 - Wyoming Coalbed Methane Producing/Shut-In Wells
- Fig. 74 - Wyoming Coalbed Methane Production By Well/Day
- Fig. 75 - Wyoming Coalbed Methane Production By Completed Wells
- Fig. 76 - Wyoming Coalbed Methane % of Federal Production
- Fig. 77 - Wyoming Coalbed Methane Activity as of 1/4/2002

United States and Worldwide Oil & Gas Activity

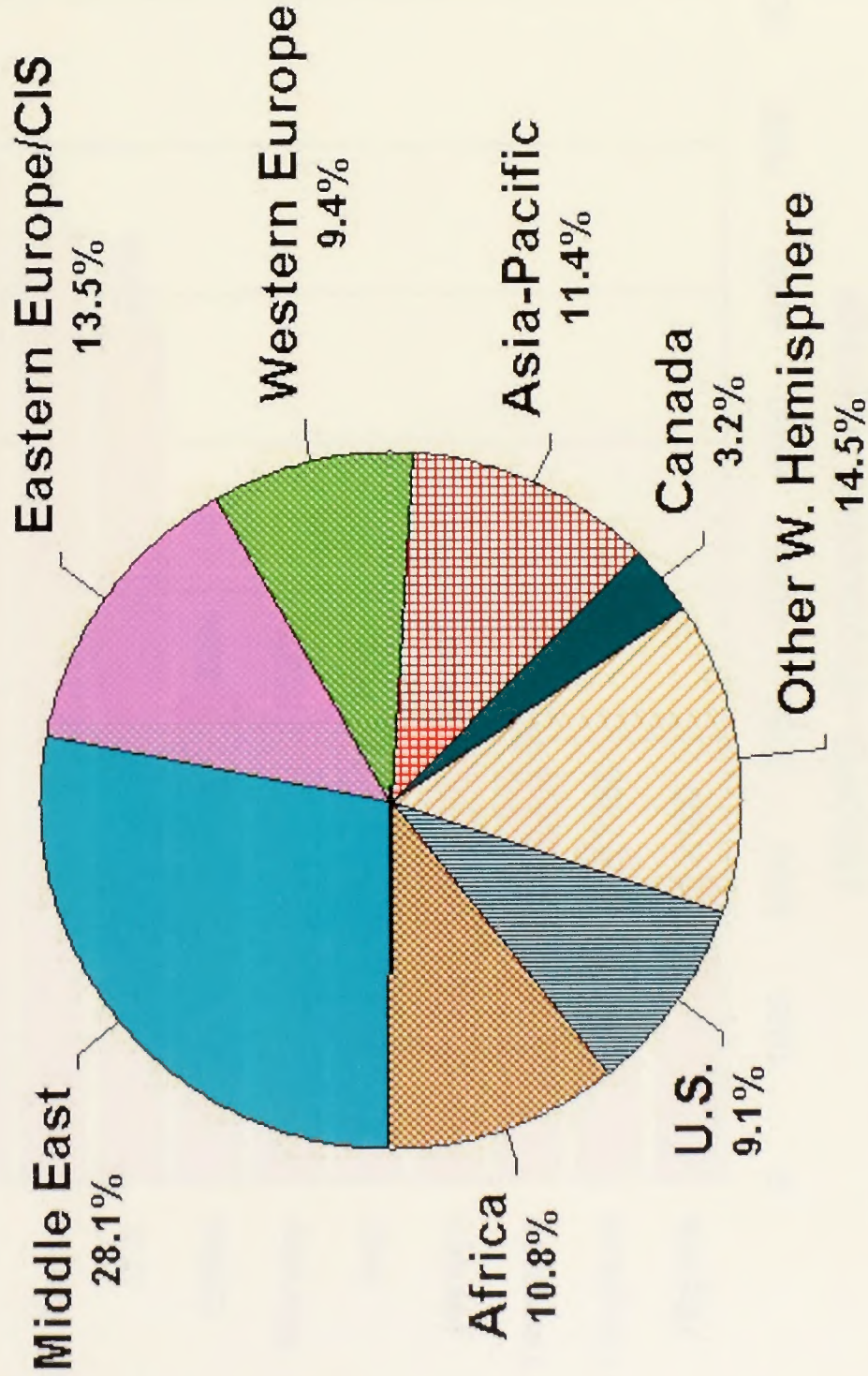
WORLDWIDE OIL PRODUCTION



Source: O&GJ-4/22/96, pg. 46, 3/11/96, pg. 109, 12/24/01, pg. 127
Total 2001 (est.) World Oil Production = 63,695 MMBBLs/Day

Figure 1

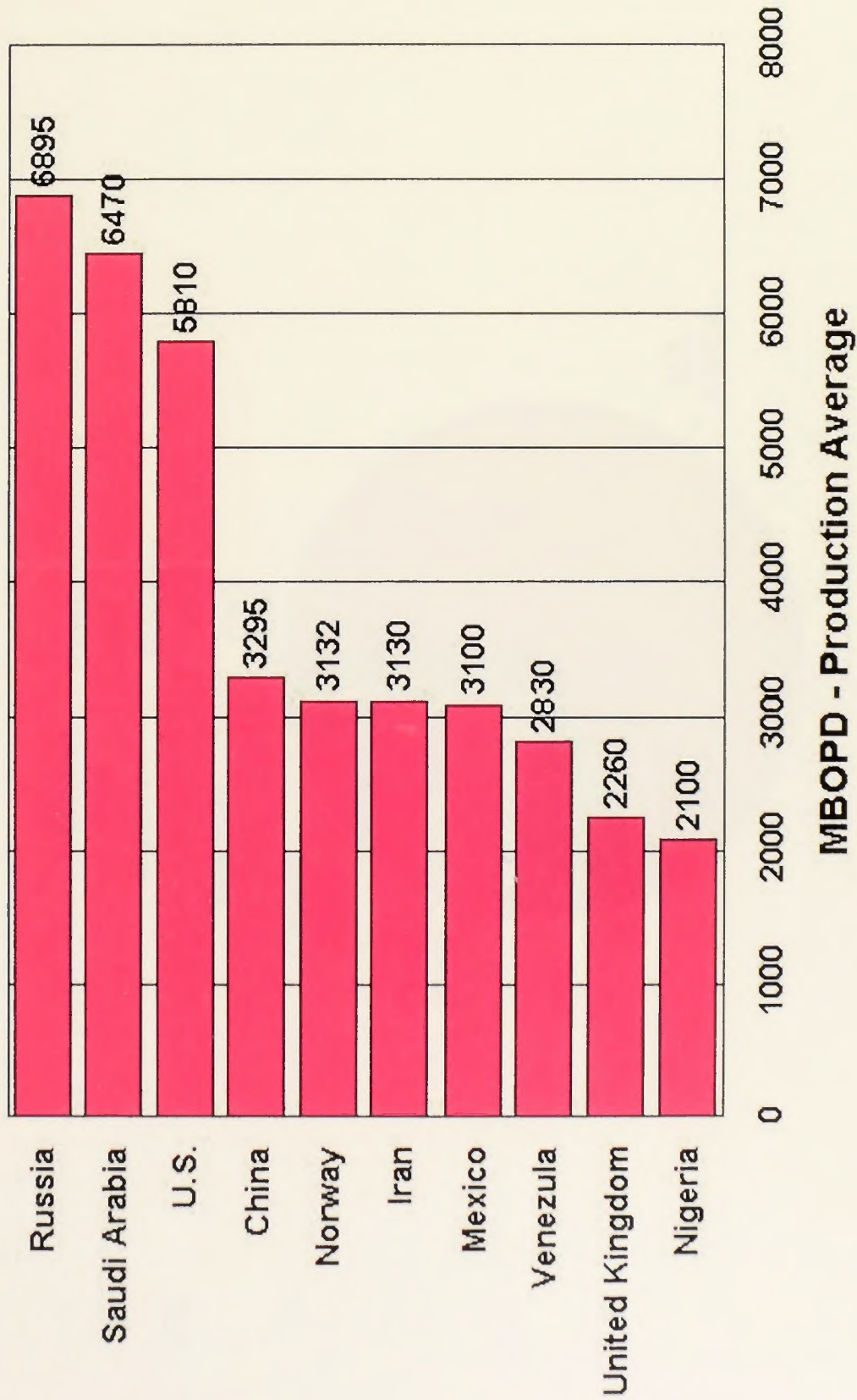
WORLDWIDE OIL PRODUCTION - 2001 Est.



Source: O&GJ - 12/24/01, pg. 126, Total 2001 Estimated World Production = 63,695 MBBLS/Day
Total 2001 Estimated U.S. Production = 5,810 MBBLS/Day

Figure 2

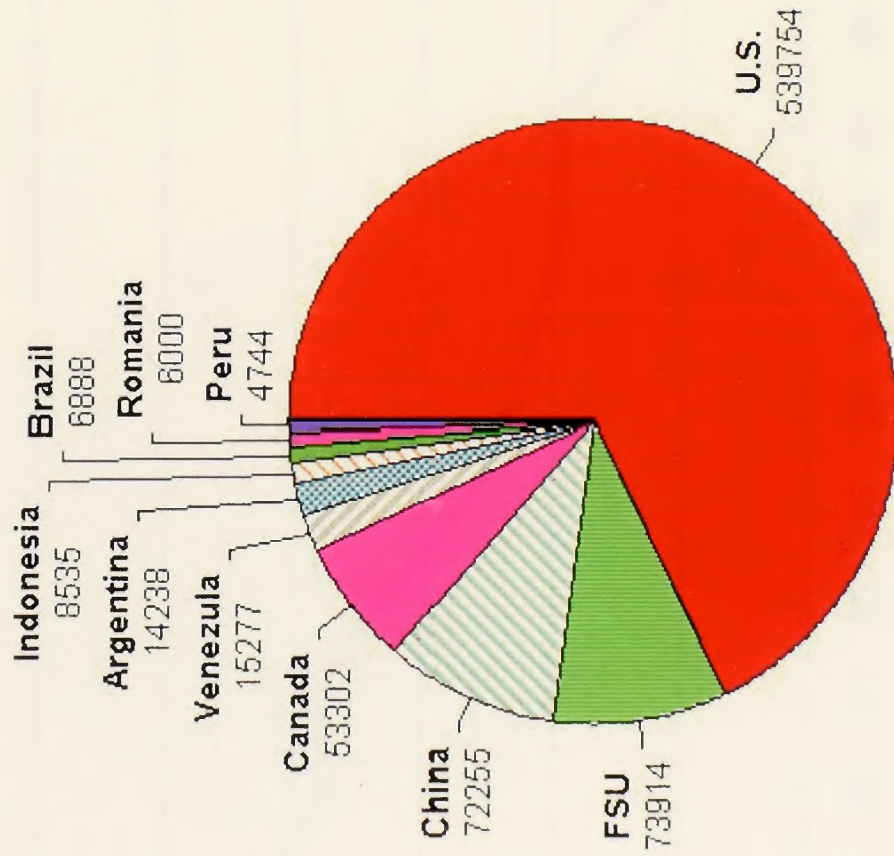
Top Ten Countries In Worldwide Oil Production



Source: OGJ 12/24/01, pg. 126-127
Total 2001 Est. Worldwide Oil Prod. = 63,695 MBOPD (U.S. = 9%)

Figure 3

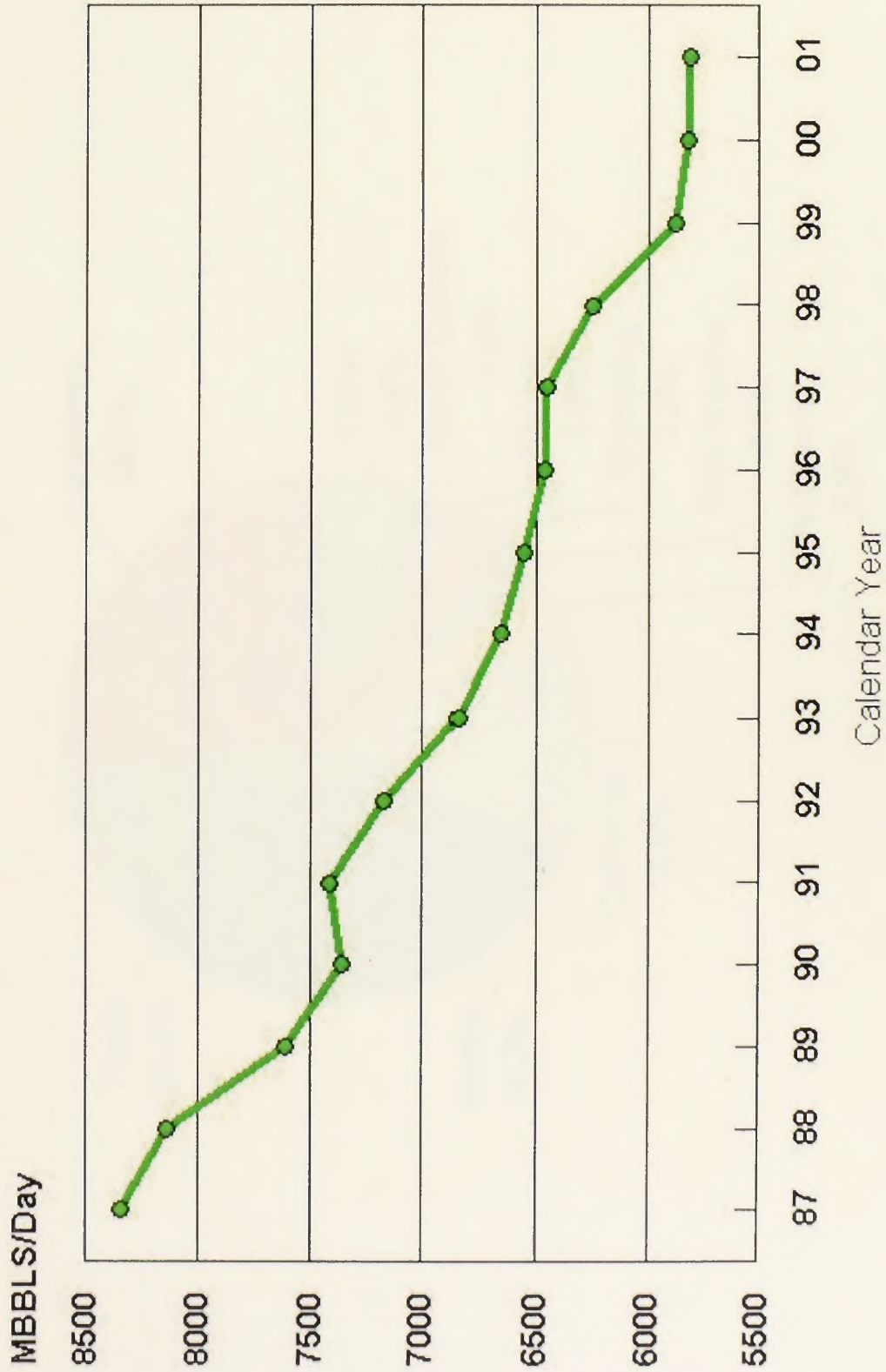
Number of Producing Oil Wells By Country (Top Ten) - 2000



Source: O&GJ, 12/24/01, pg. 126-127, Saudi Arabia = 1,560 prod. oil wells
Total Est. Worldwide Producing Oil Wells as of 12/31/00 = 834,313 (U.S. = 65%)

Figure 4

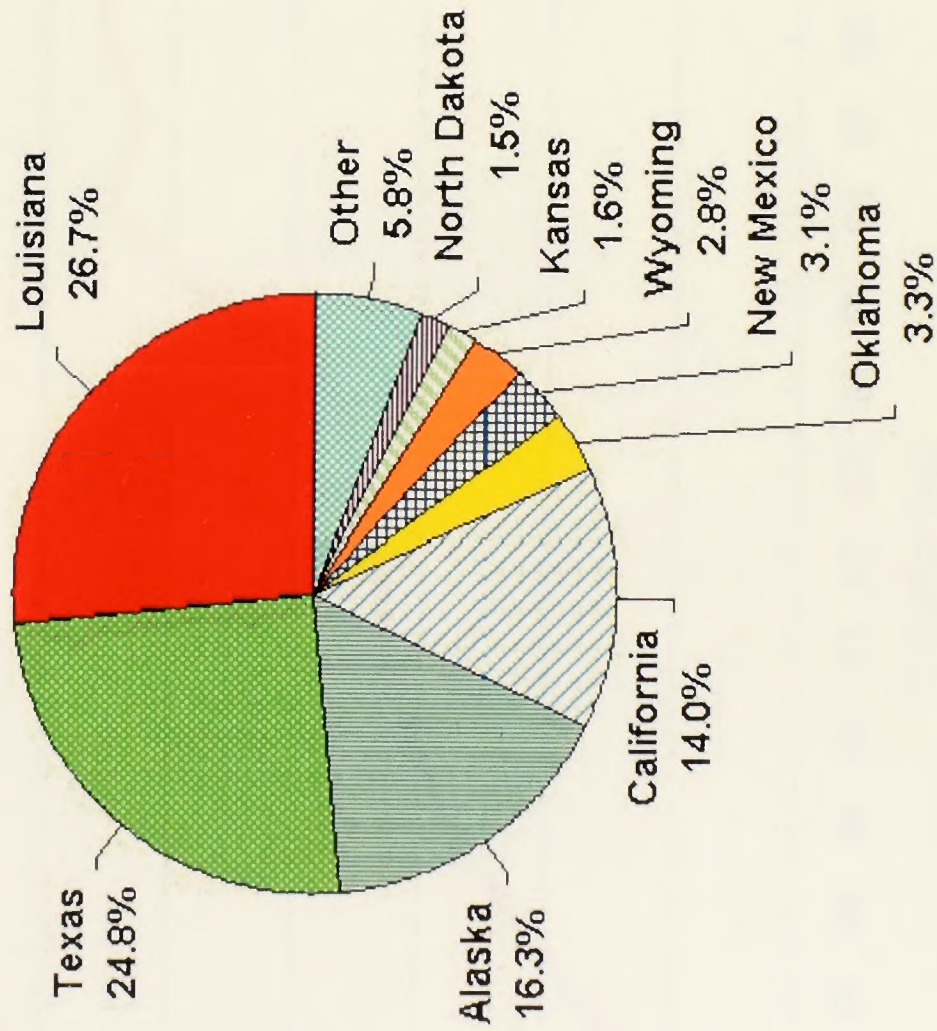
U.S. OIL PRODUCTION



Source: O&GJ Dec. 24, 2001 pg. 127
Total est. 2001 Production = 5,810 MBBLs/day

Figure 5

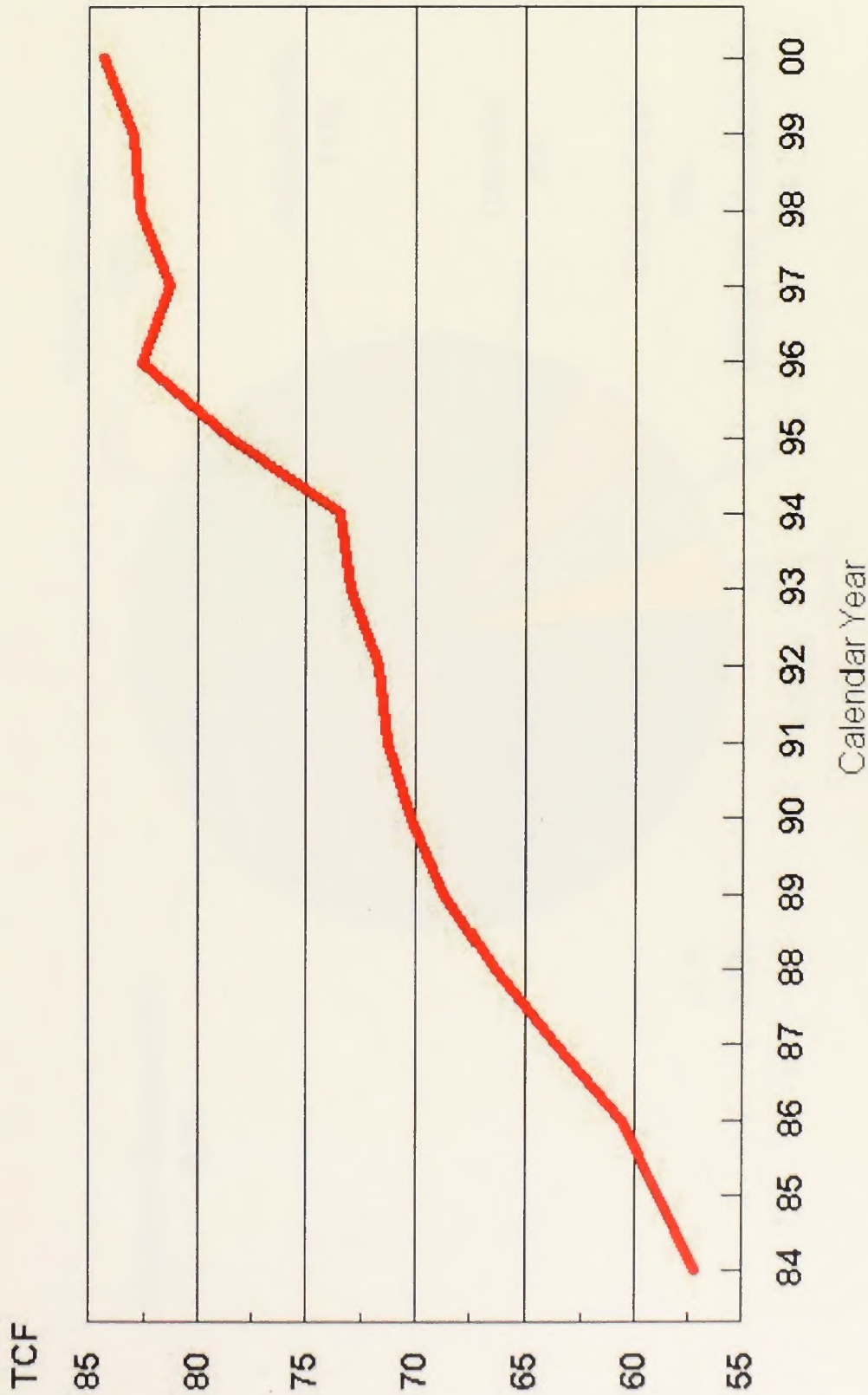
2001 U.S. OIL PRODUCTION



Source: Oil & Gas Journal -1/28/02, pg. 74, crude oil & lease condensate, 2001 figures preliminary
Total Average 2001 U.S. Production (prelim.) = 5830 MBBLS/Day

Figure 6

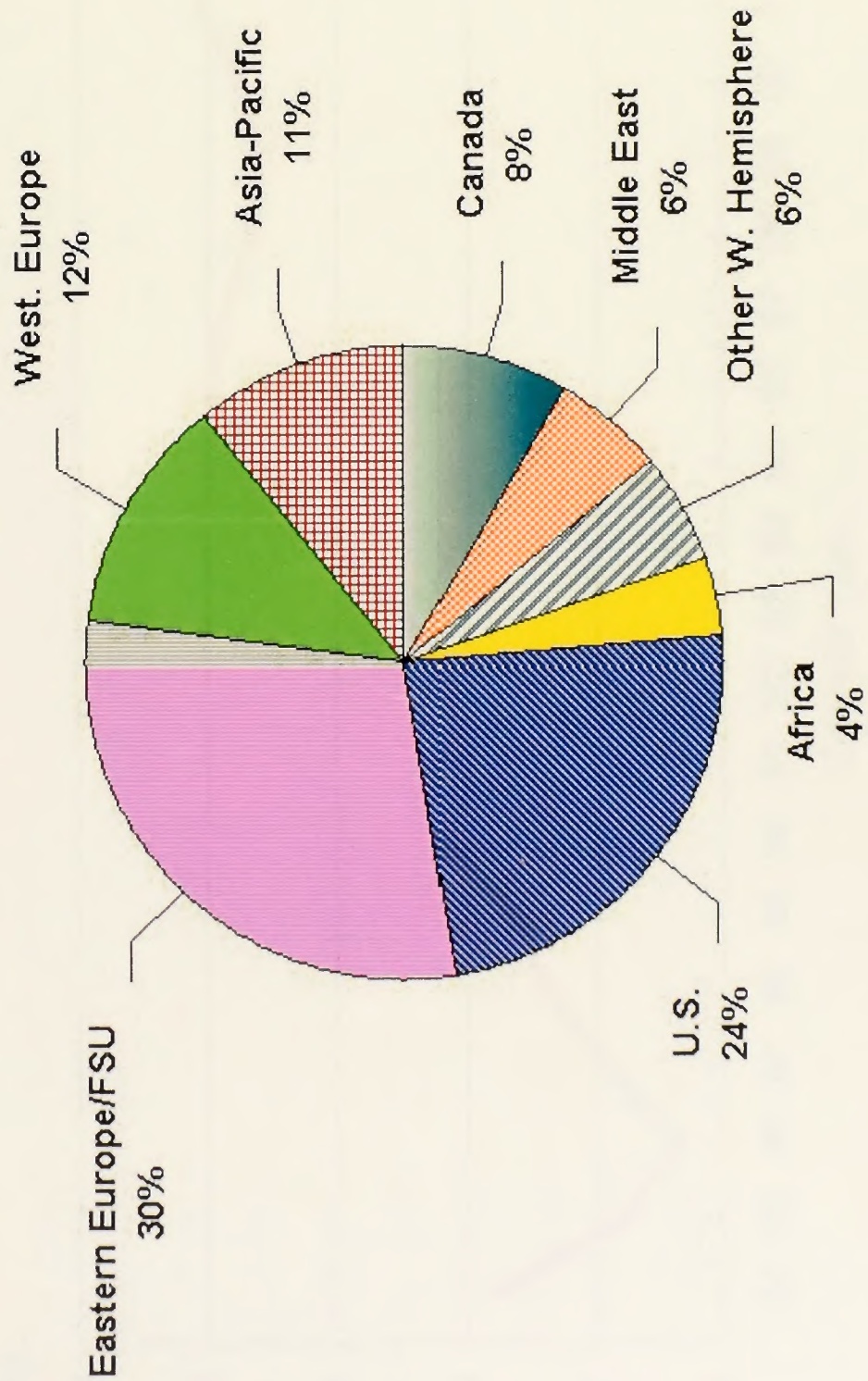
WORLDWIDE GAS PRODUCTION



Source: O&GJ - 4/22/96, pg. 60, 3/8/99, pg. 93, 3/13/00, pg. 70, 6/25/01, pg. 72
Total 2000 World Production = 84,397 BCF, Total U.S. Prod. = 19,670 BCF (24%)

Figure 7

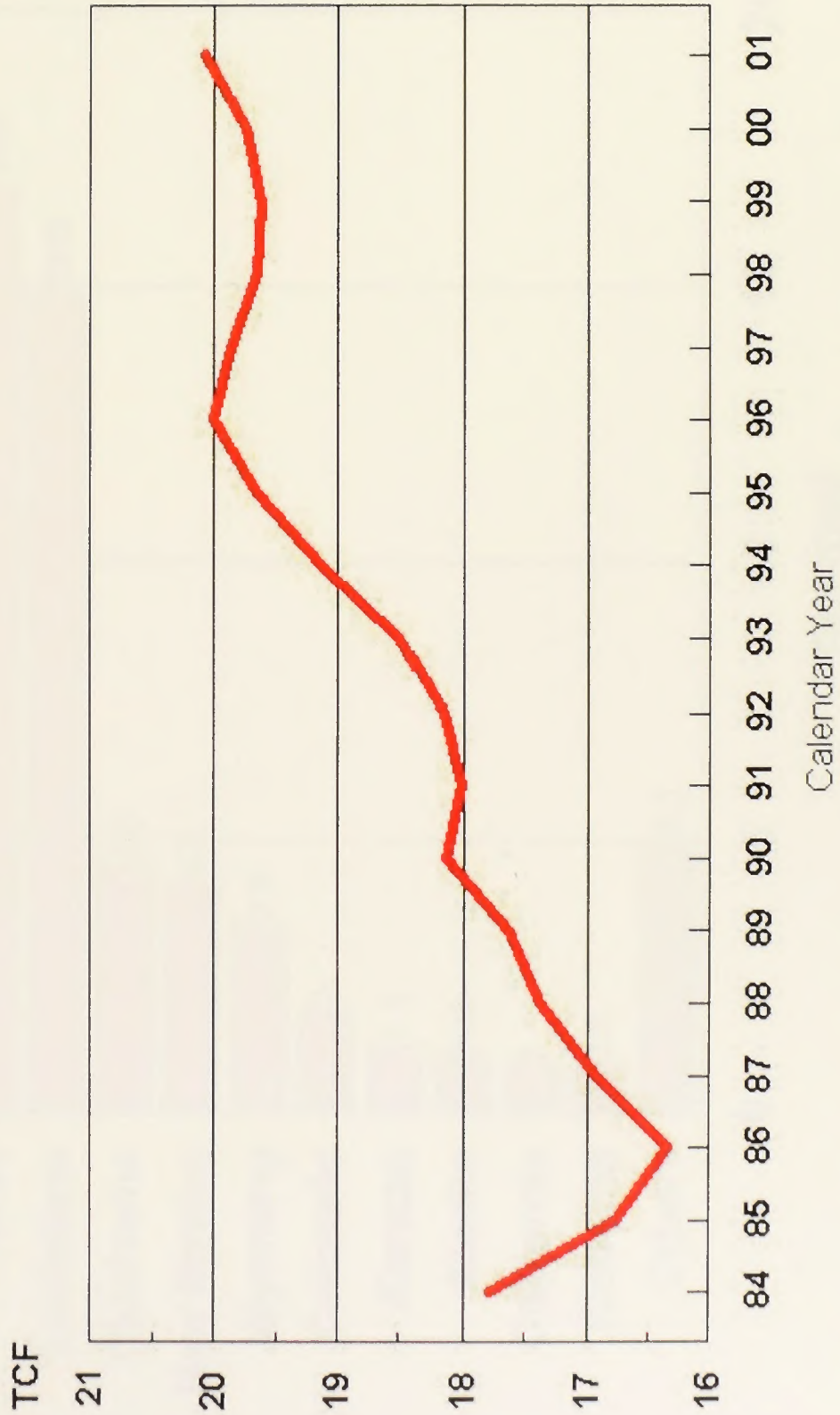
WORLDWIDE GAS PRODUCTION - 2000



Source: Oil & Gas Journal - 3/12/01, pg. 82
Total 2000 World Production = 84,397 BCF, Total U.S. Production = 20,067 BCF (24%)

Figure 8

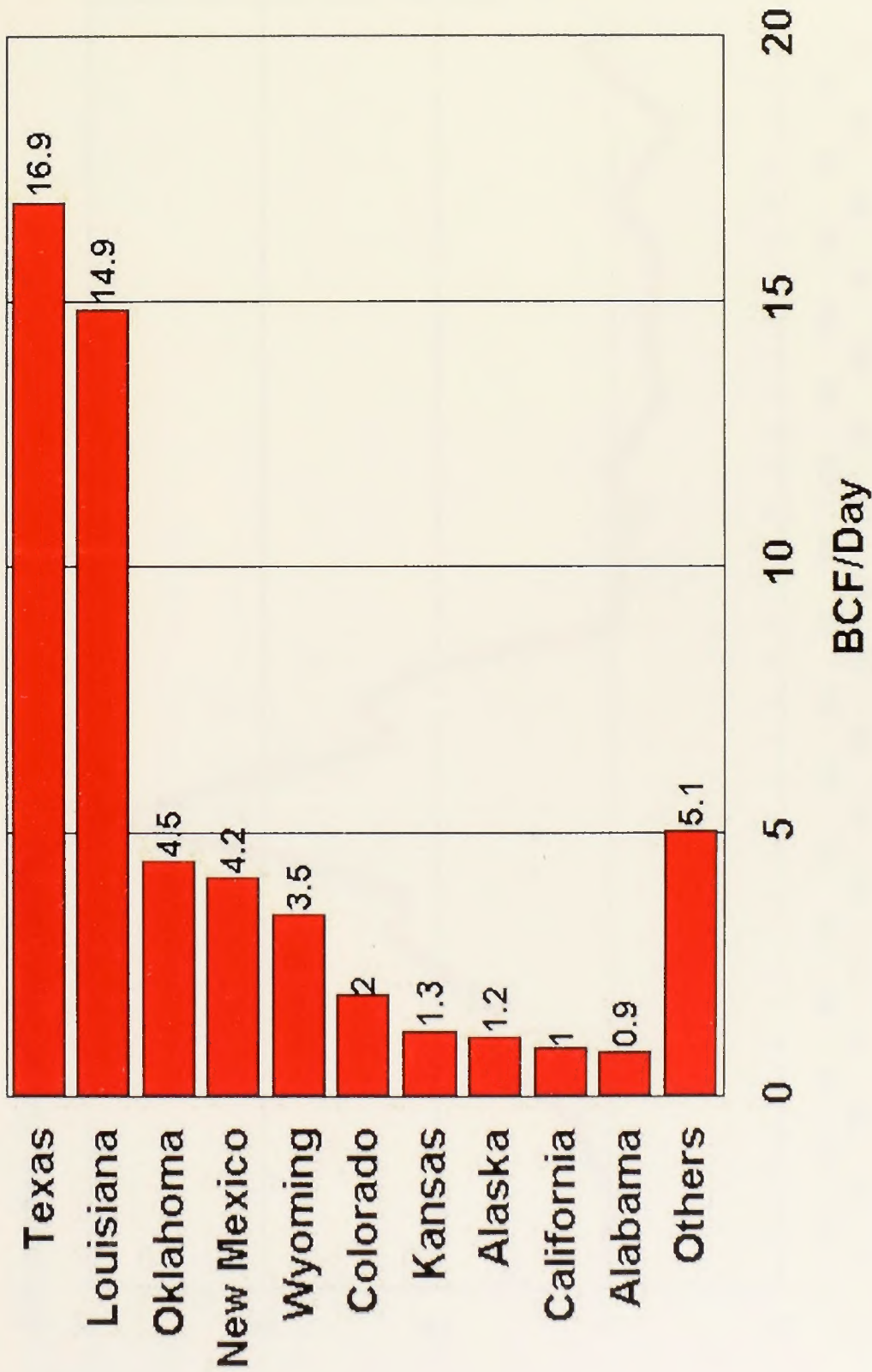
U.S. GAS PRODUCTION (TCF)



Source: O&GJ - 4/22/96, pg. 60, 3/9/98, pg. 84, 1/29/01, pg. 68, 6/25/01, pg. 72
Total 2000 U.S. Production = 20.1 TCF

Figure 9

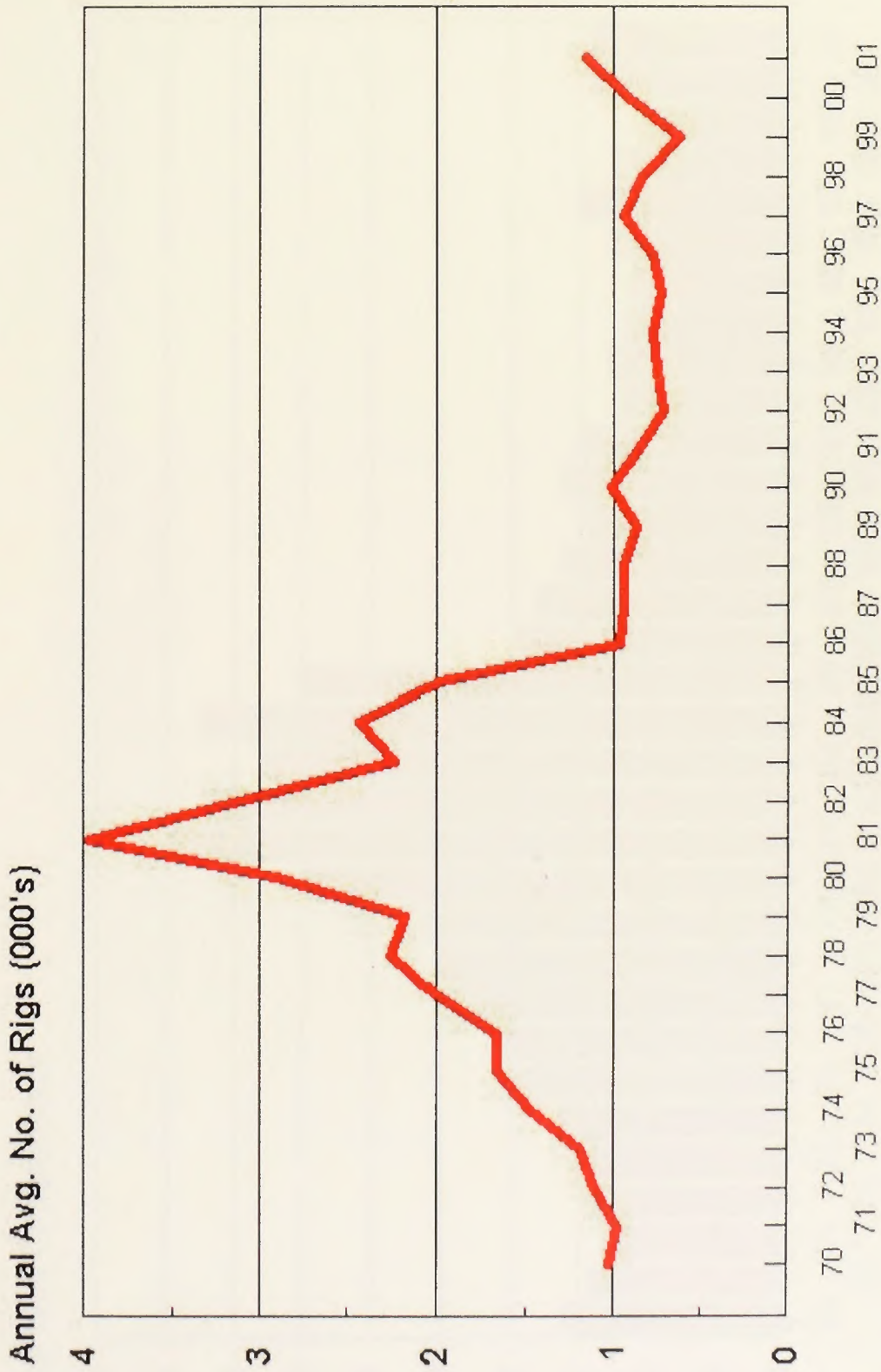
MARKETED NATURAL GAS PRODUCTION - 2001



Source: O&GJ 1/28/2002, pg. 78, Includes nonhydrocarbon gases.
Total Est. 2001 US Marketed Gas Production = 55.5 BCF/Day

Figure 10

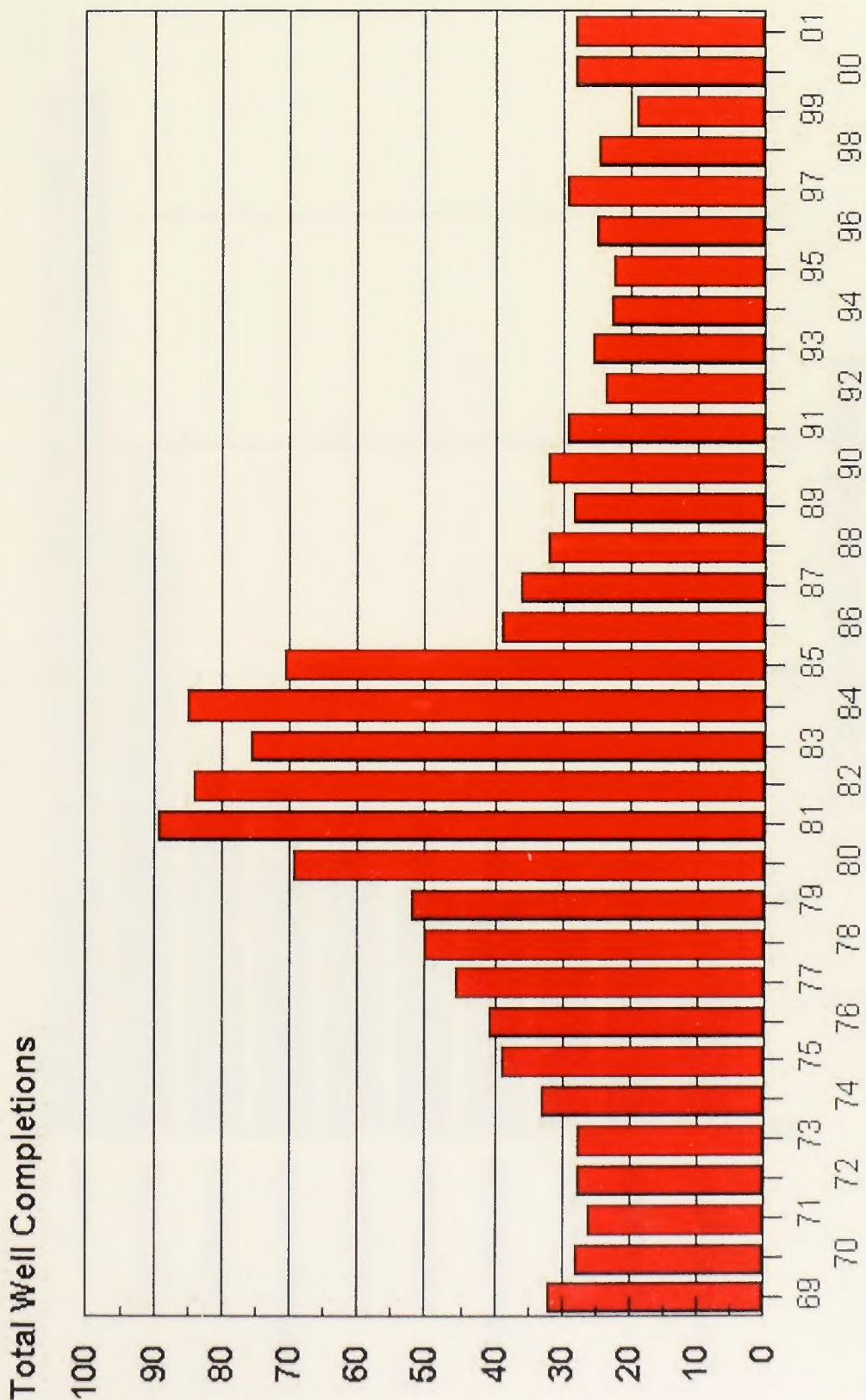
U.S. ROTARY RIG ACTIVITY



Source: O&GJ, Jan. 28, 2002, pg. 77, 1999 DOE/EIA-0216(99) report, pg. 10
2001 avg. no. of rigs = 1156, Peak year 1981 = 3,970 rigs

Figure 11

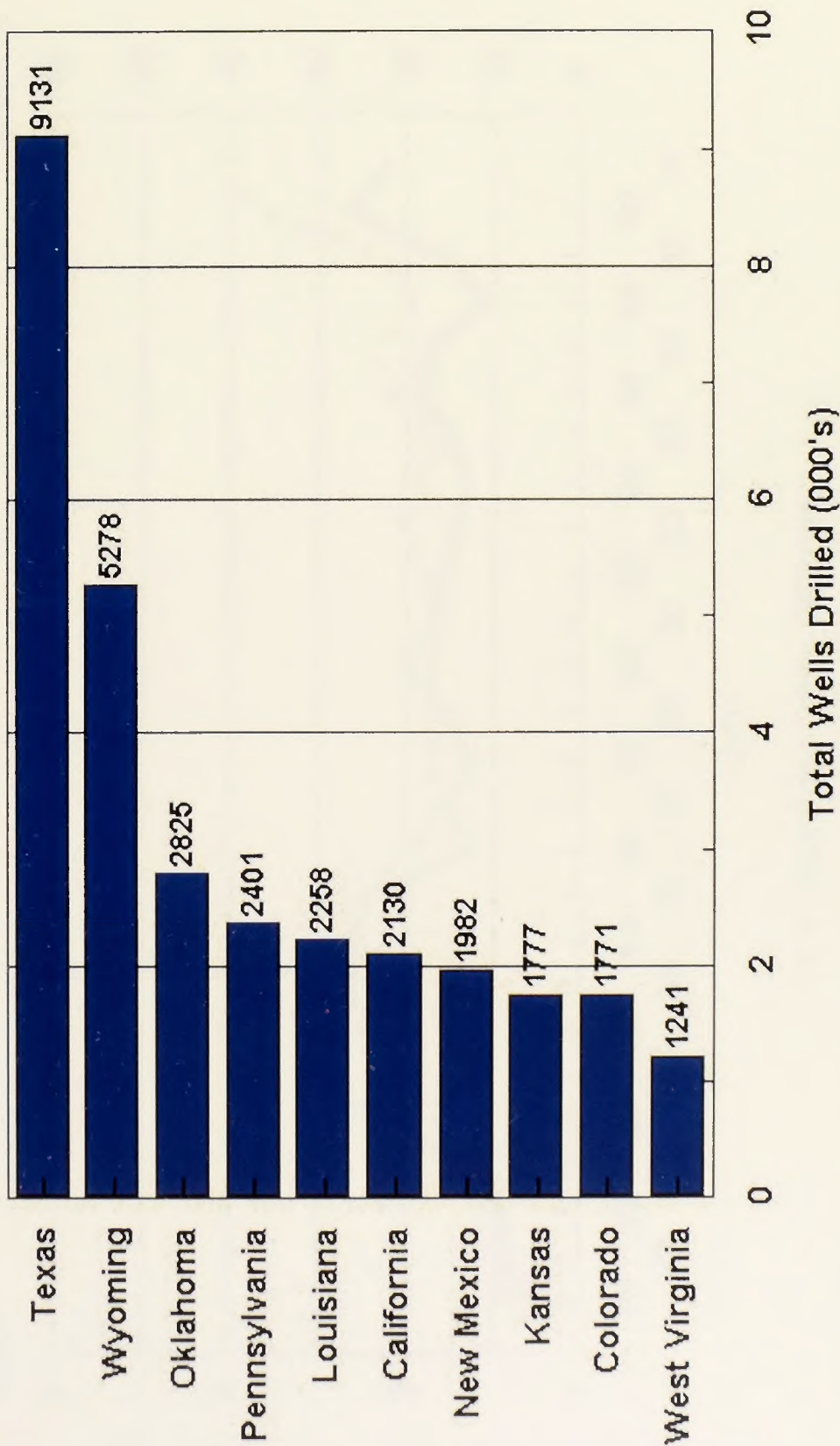
ONSHORE AND OFFSHORE U.S. TOTAL OIL & GAS WELL COMPLETIONS



Source: O&GJ, Jan. 28, 2002, pg. 86, 2001 est.
Avg. depth per 2001 well = 5355 feet

Figure 12

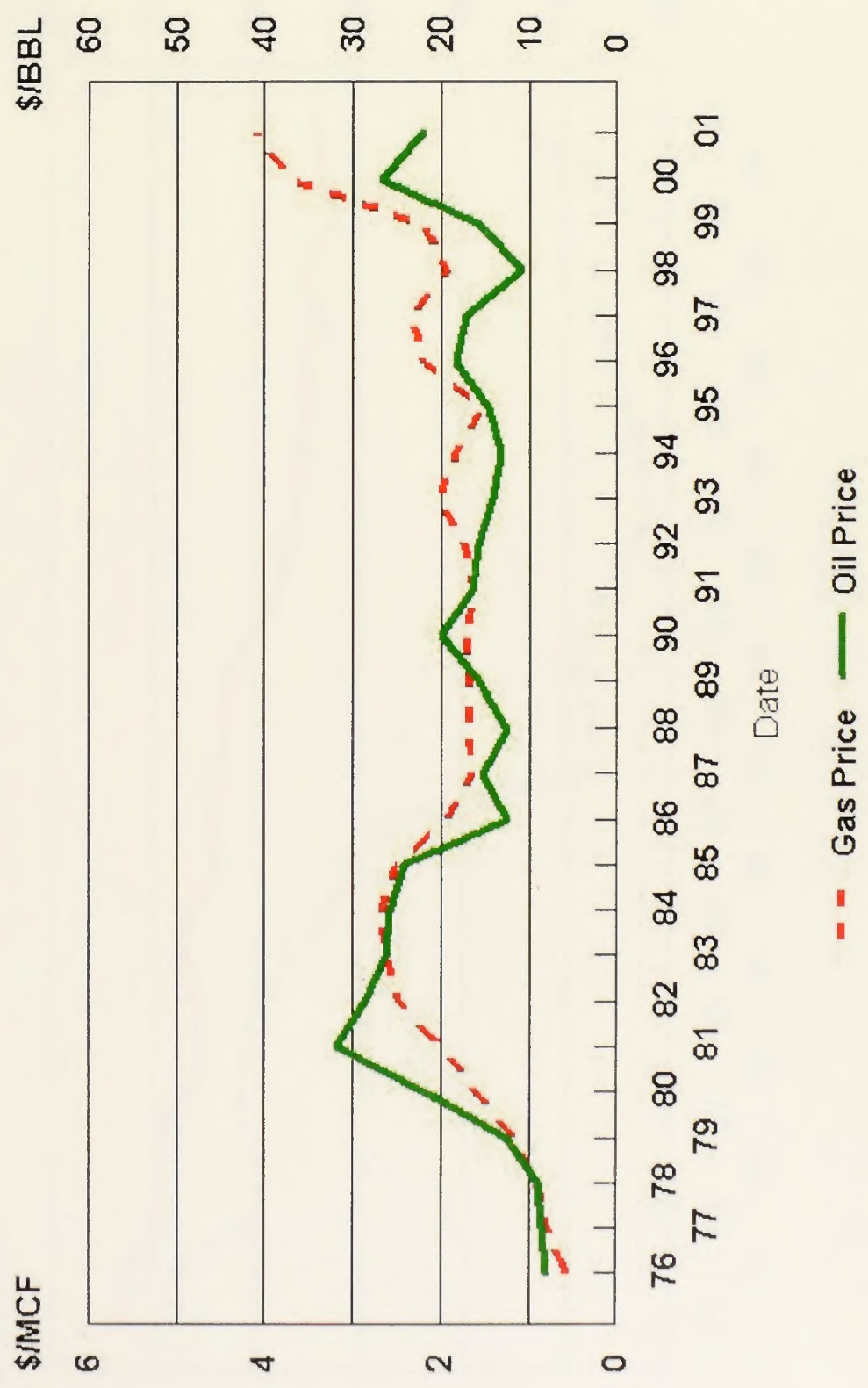
**ONSHORE AND OFFSHORE U.S. - 2001
TOTAL OIL & GAS WELLS DRILLED**



Source: O&GJ, Jan. 28, 2002, pg. 87, Other States = 6,196 wells drilled
Total est. 2001 U.S. wells drilled = 36,990 (18% are exploratory)

Figure 13

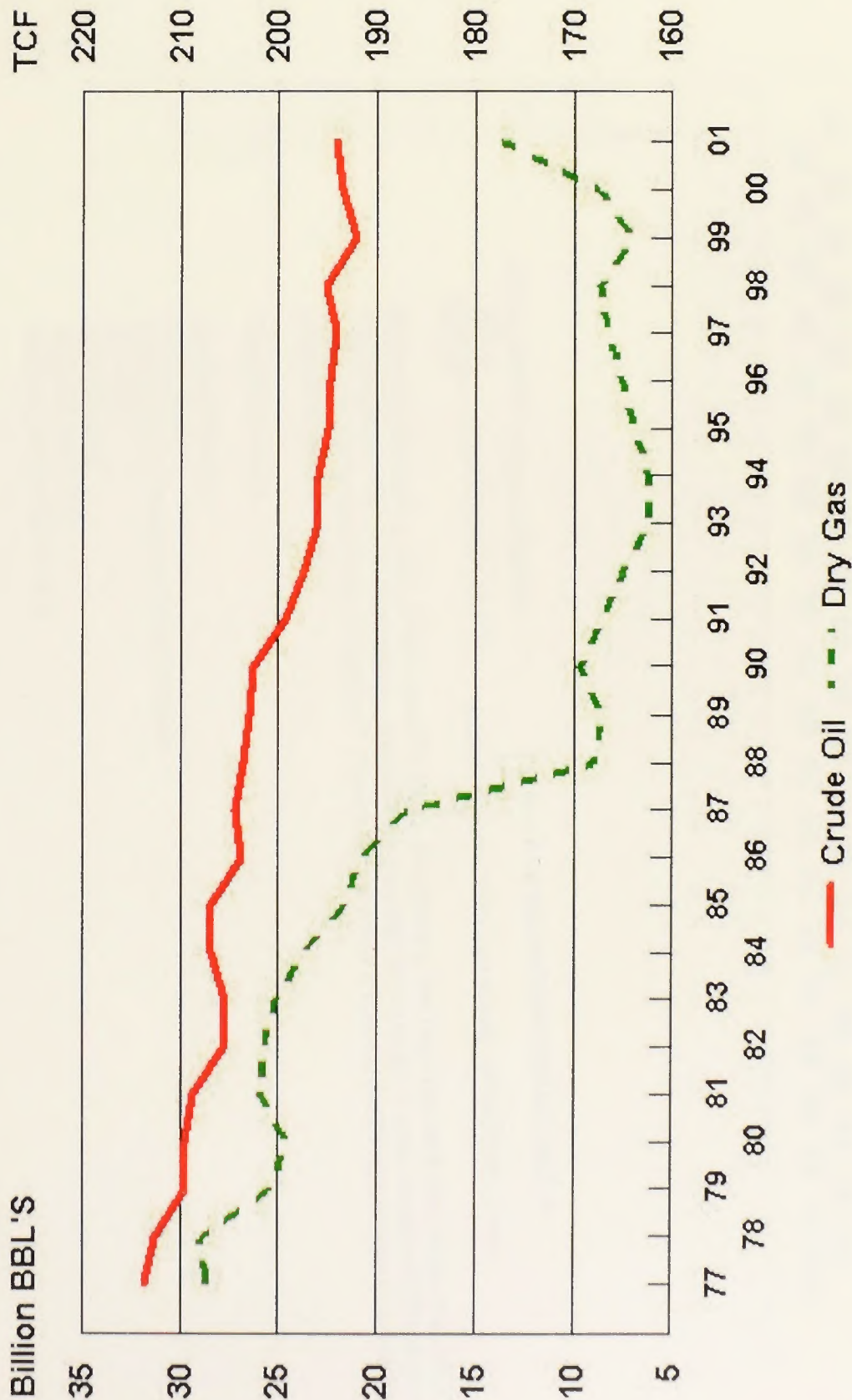
U.S. AVERAGE WELLHEAD PRICE
CRUDE OIL AND NATURAL GAS



OGJ - Jan. 28, 2002, pg. 72
2001 estimate = 4.10 \$/Mcf, 22.00 \$/bbl

Figure 14

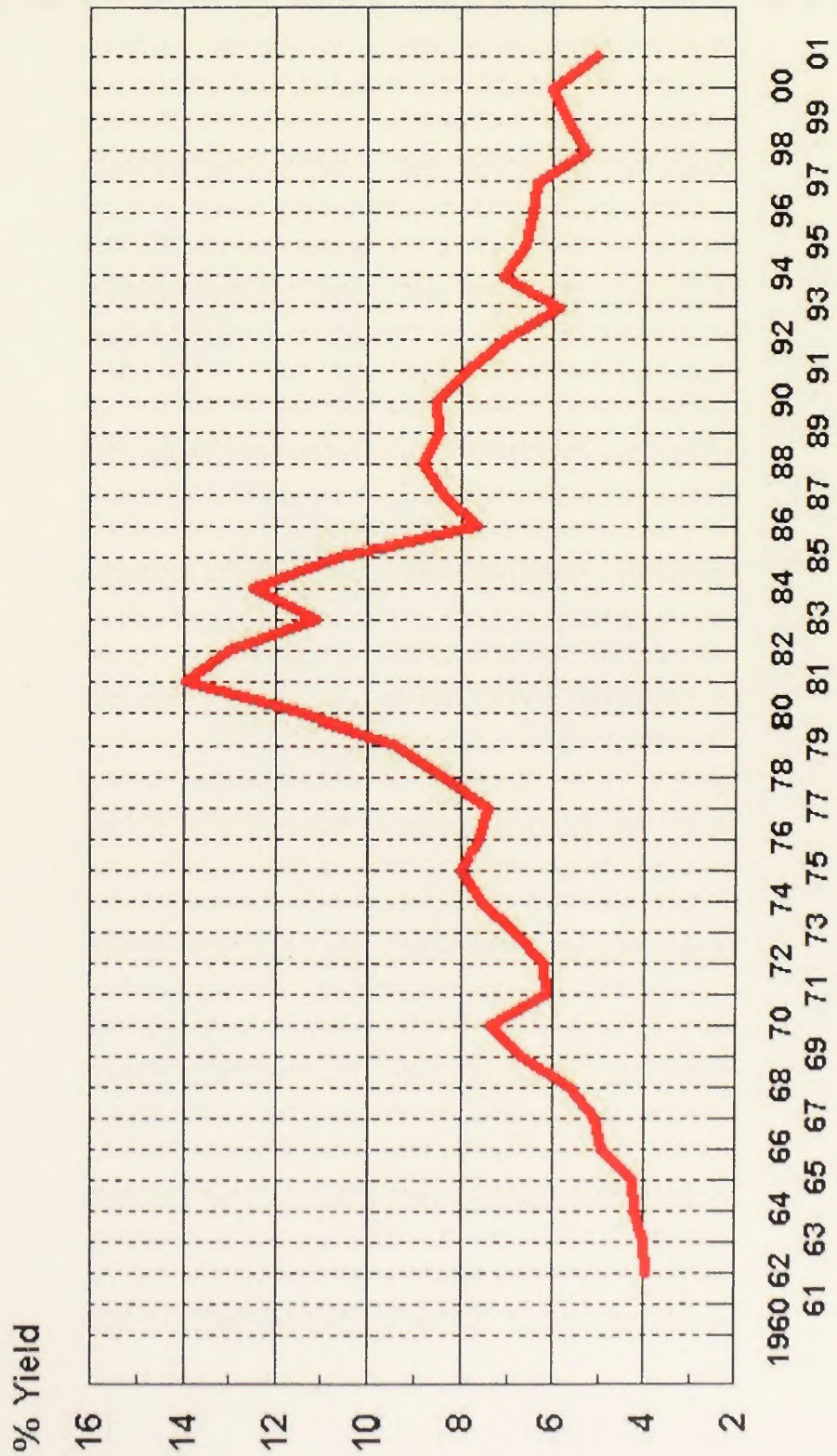
U.S. PROVED RESERVES



Source: 1999 DOE/EIA-0216(99) report, pg. 4, O&GJ 12/24/01 pg. 127
Total US Proved Reserves = 22 Billion Bbls, 177 Tcf as of 1/1/02

Figure 15

ANNUAL YIELD RATES 10-YEAR GOVERNMENT SECURITIES

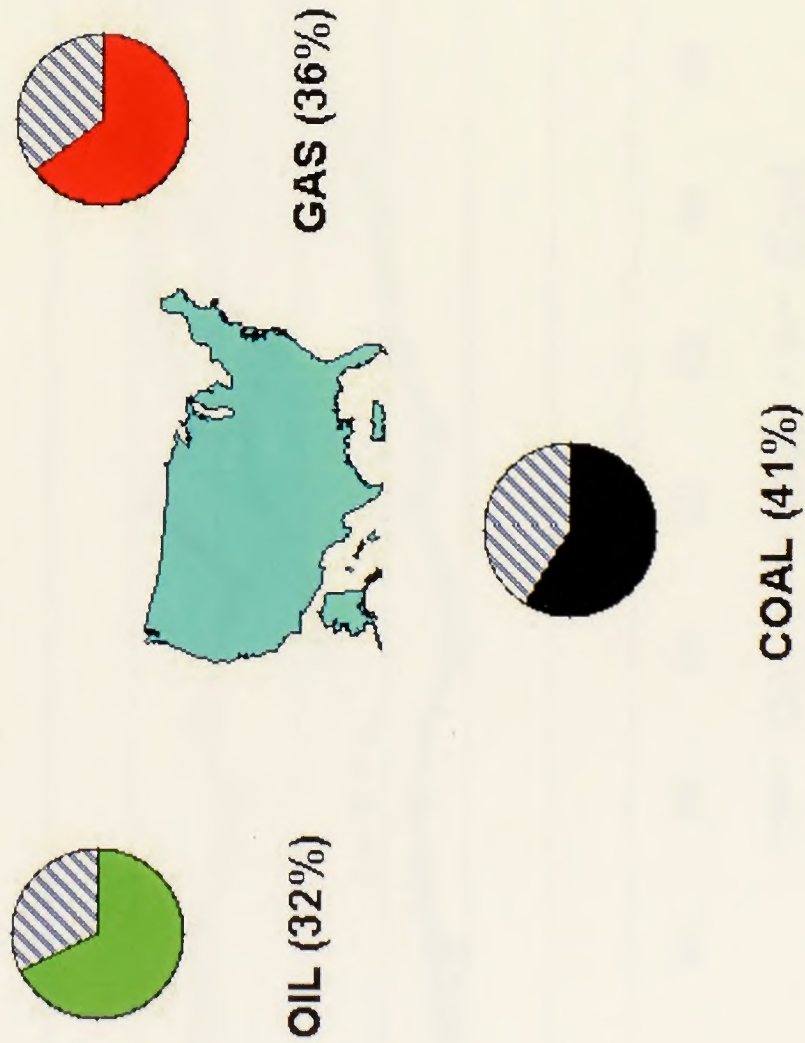


Source: Federal Reserve Board Internet Site, Rates from 1962-01.
2001 = 5.02, 1962-2001 avg. = 7.43

Figure 16

Federal and Indian Lands Production and Revenue

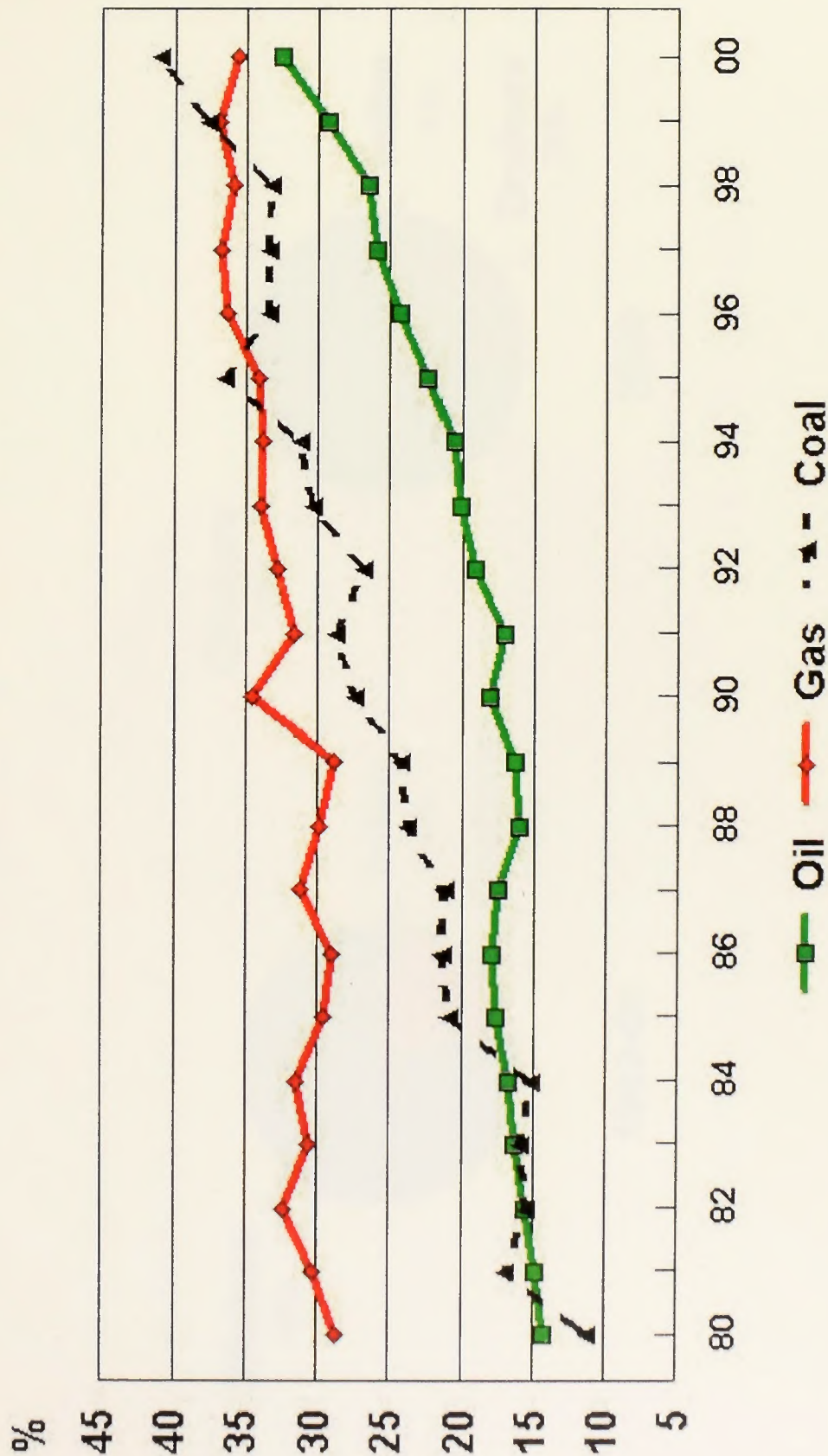
% OF FEDERAL AND INDIAN PRODUCTION FROM 2000 TOTAL U.S. PRODUCTION



Source: MMS Min. Rev. Report 2000, Table 11, pg. 29-30
(Offshore and Onshore), crosshatch is Fed./Ind. portion.

Figure 17

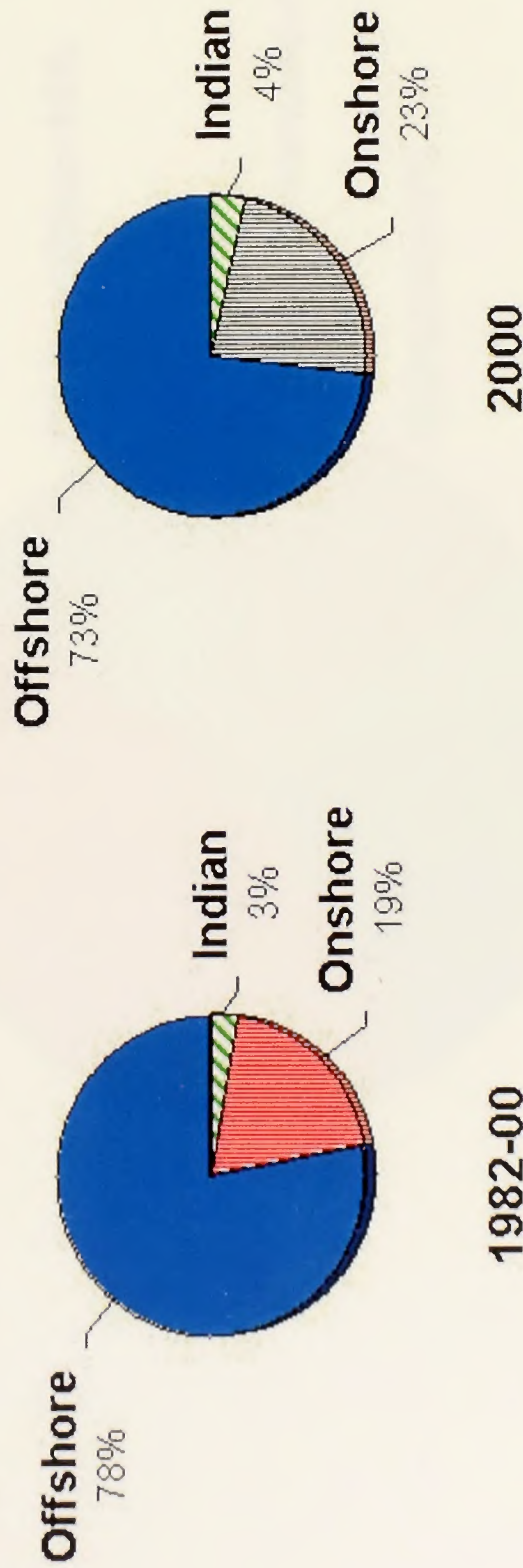
% of Federal Mineral Production From Total U.S. Production



Source: MMS Minerals Revenue Report 2000, Table 11, pg. 29-30
Offshore and Onshore, Oil=32.4%, Gas=35.5%, Coal=40.9%

Figure 18

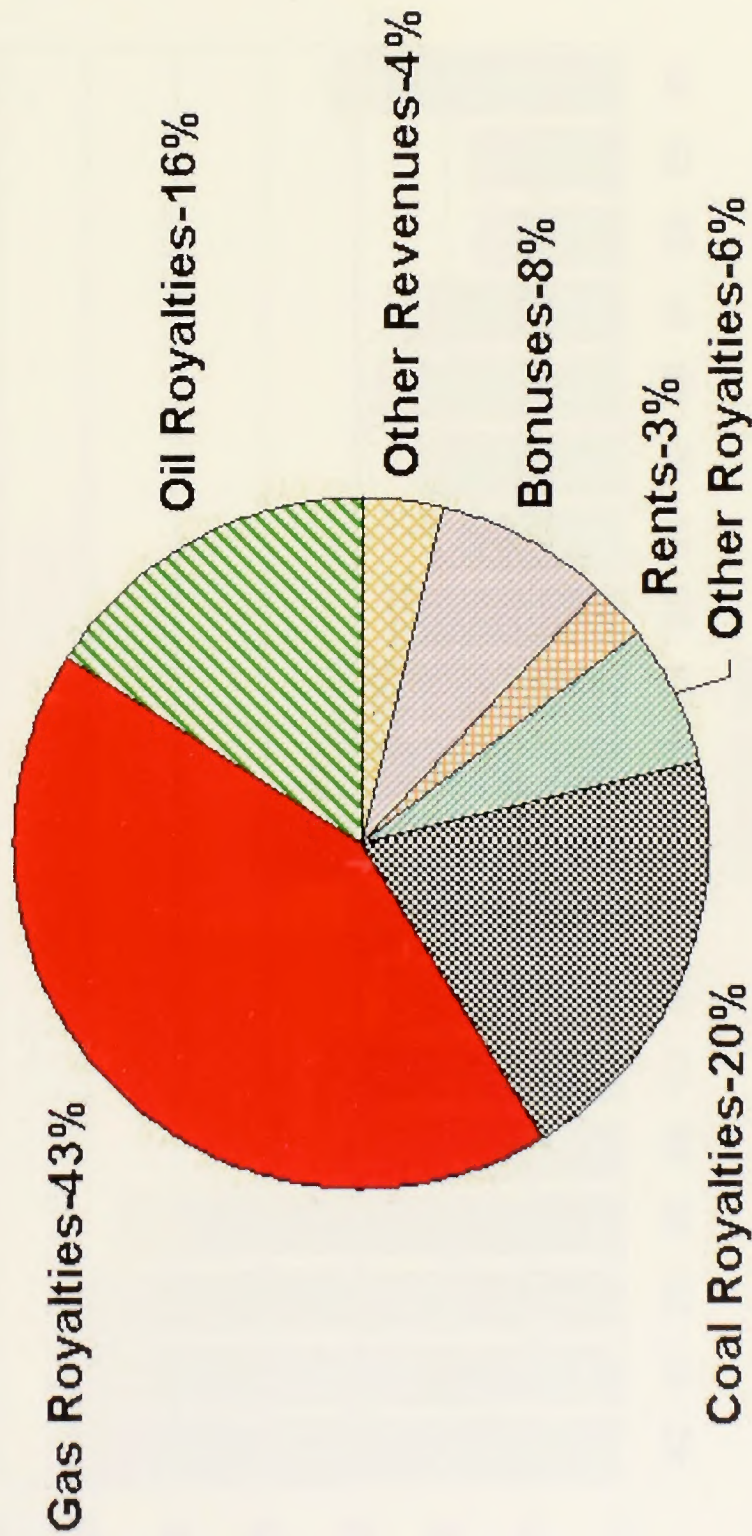
OIL AND GAS MINERAL LEASES REVENUES FEDERAL AND INDIAN



Source: MMS Mineral Revenues Report 2000, Total 2000 Revenues = \$7.12 Billion
Table 3, Pg. 17, Total 1982-2000 Revenues = \$104.8 Billion
Includes Rents, Bonuses, and Other Revenues

Figure 19

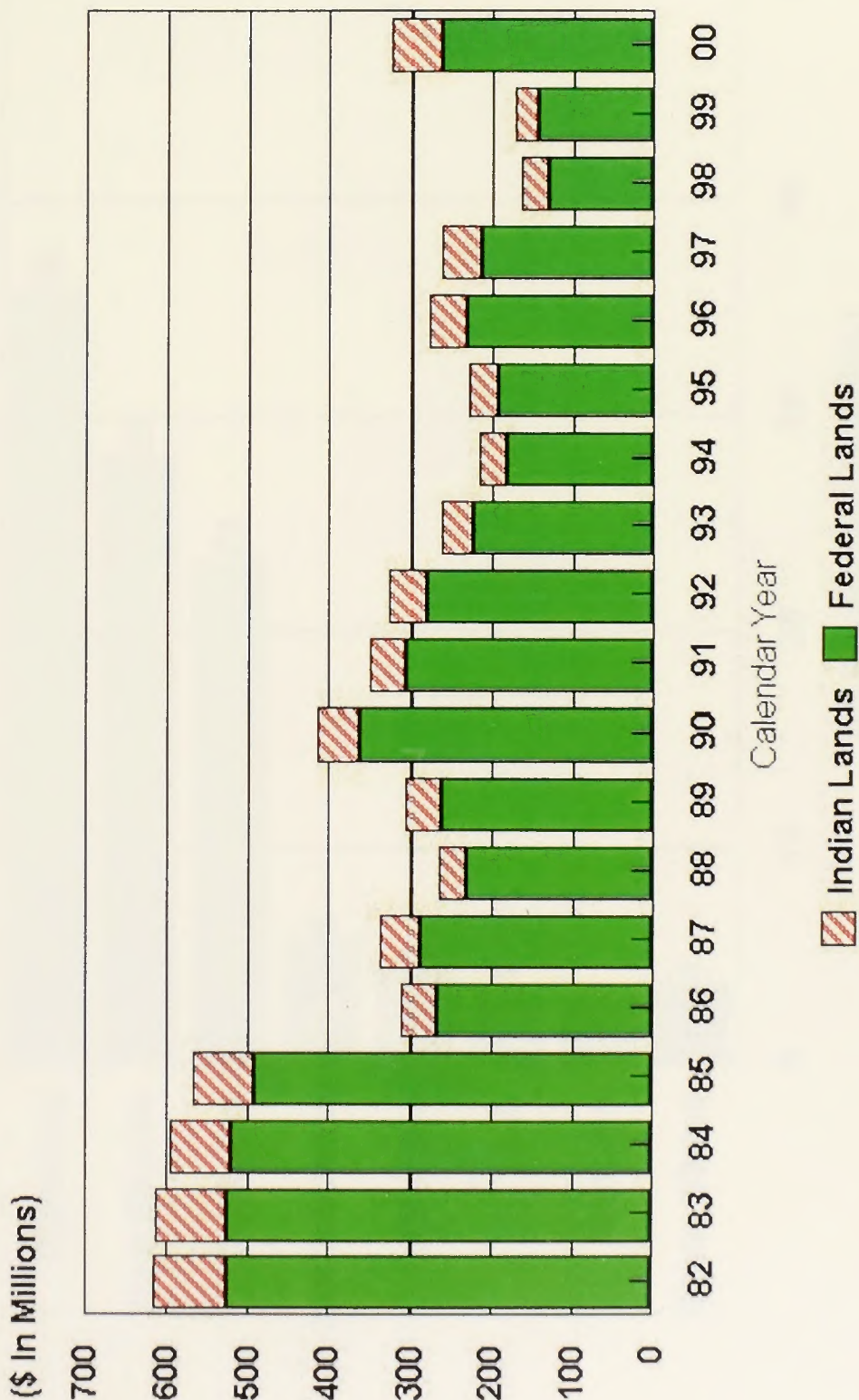
ONSHORE FEDERAL MINERAL LEASE REVENUES - CY 2000



Source: MMS Mineral Revenues Report 2000
Table 3, Pg. 17, Total Revenues = \$1,645,247,515

Figure 20

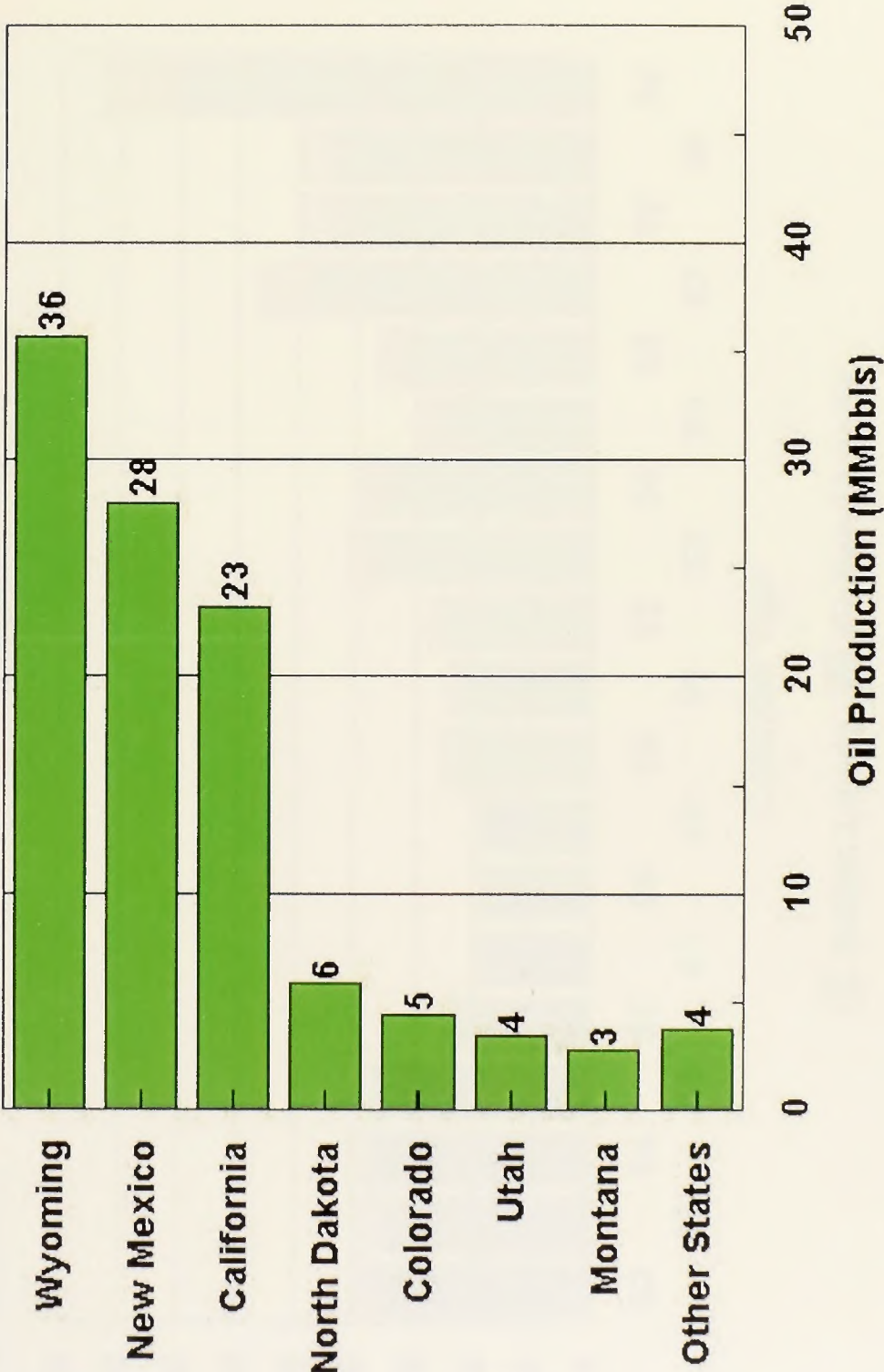
FEDERAL AND INDIAN MINERAL LEASES ONSHORE OIL ROYALTIES



Source: MMS Mineral Revenues Report 2000
Table 3, pg. 17, 2000 Total = \$321,738,540

Figure 21

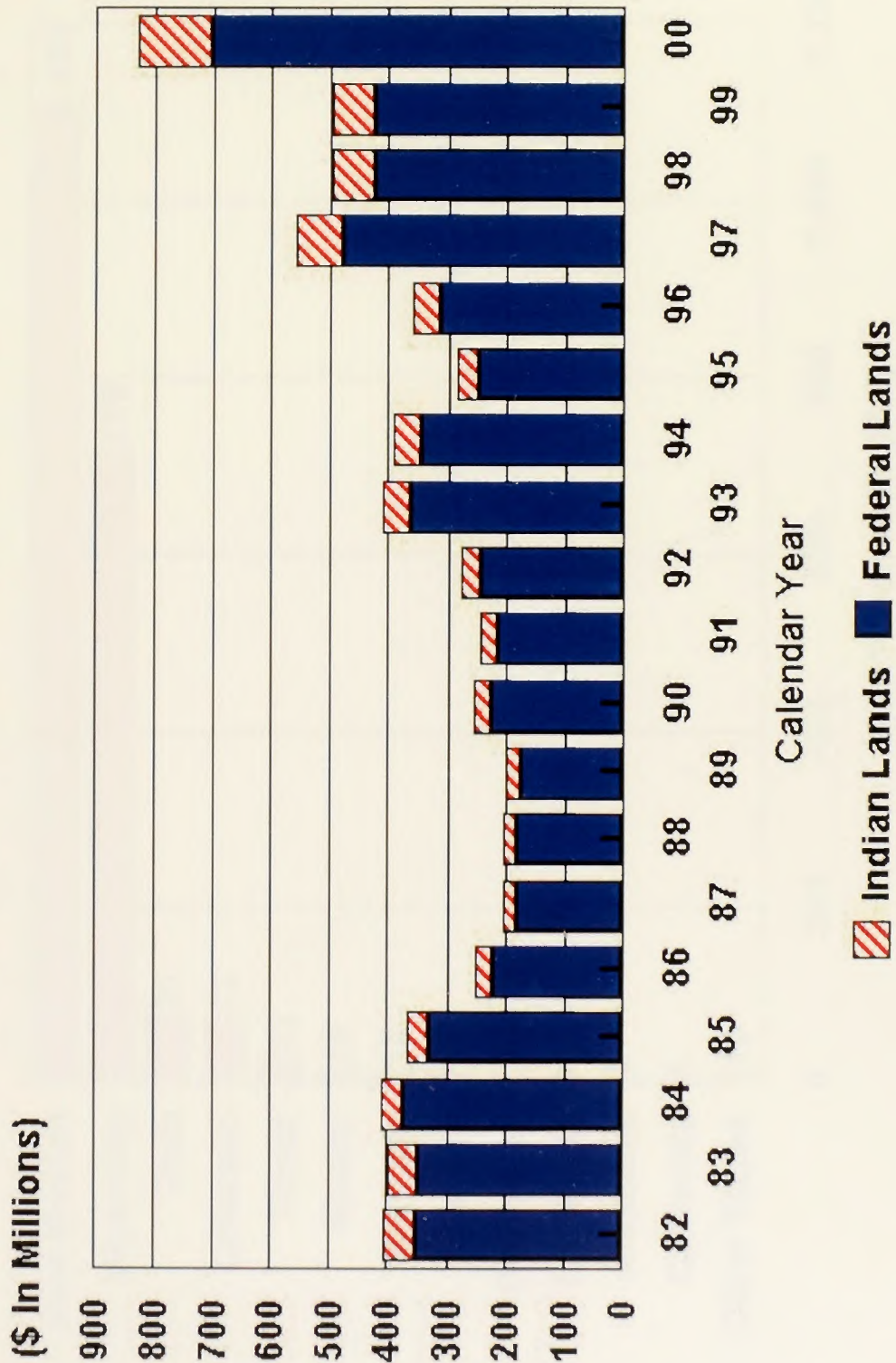
FEDERAL ONSHORE MINERAL LEASES 2000 OIL PRODUCTION



Source: MMS Mineral Revenues Report 2000, Table 23, pg. 74
2000 Oil Prod.=108.2 MMBBLS, By Geographic State

Figure 22

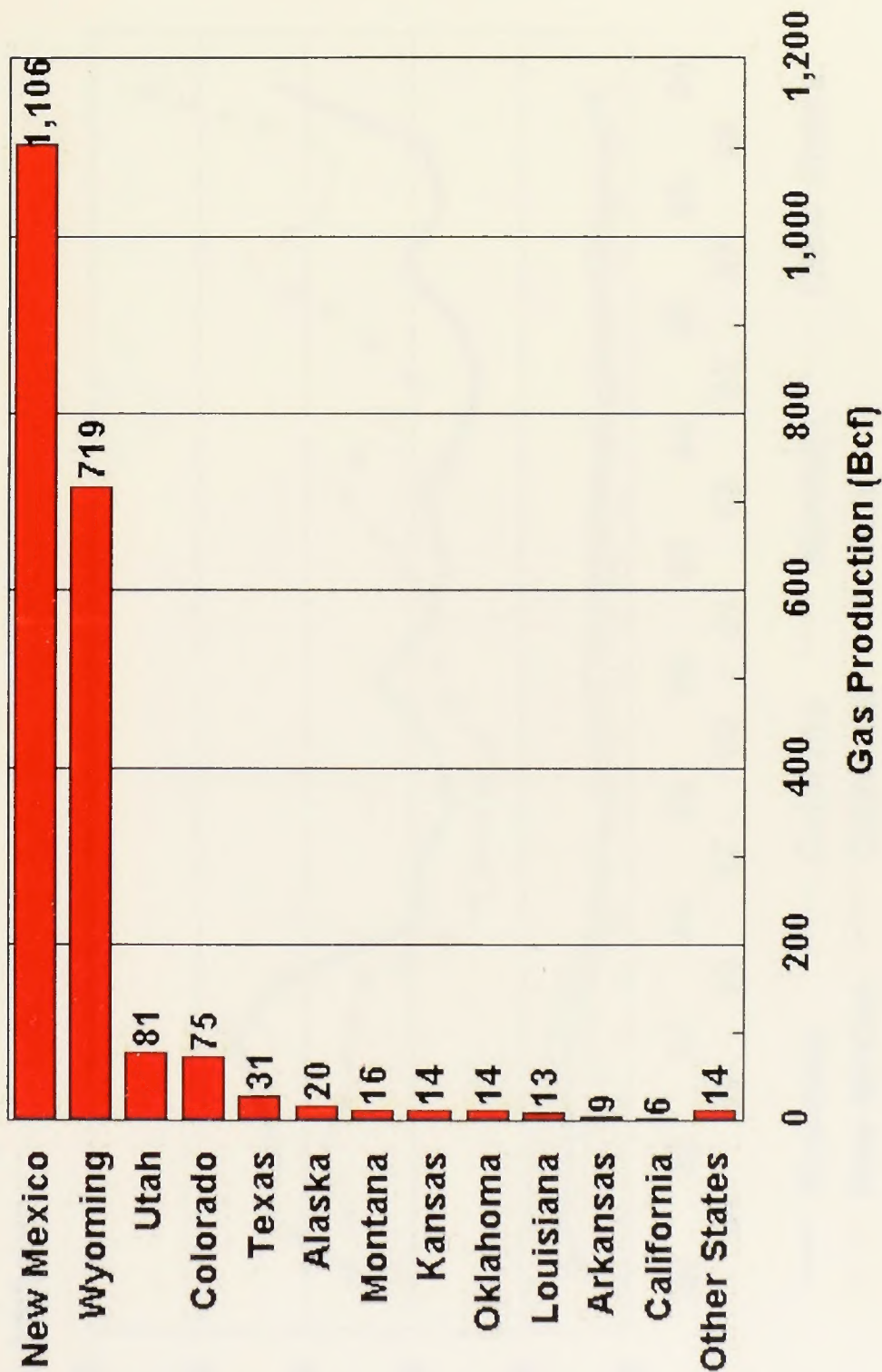
FEDERAL AND INDIAN MINERAL LEASES ONSHORE GAS ROYALTIES



Source: MMS Mineral Revenues Report 2000
Table 3, pg. 17, 2000 Total = \$828.7 MM

Figure 23

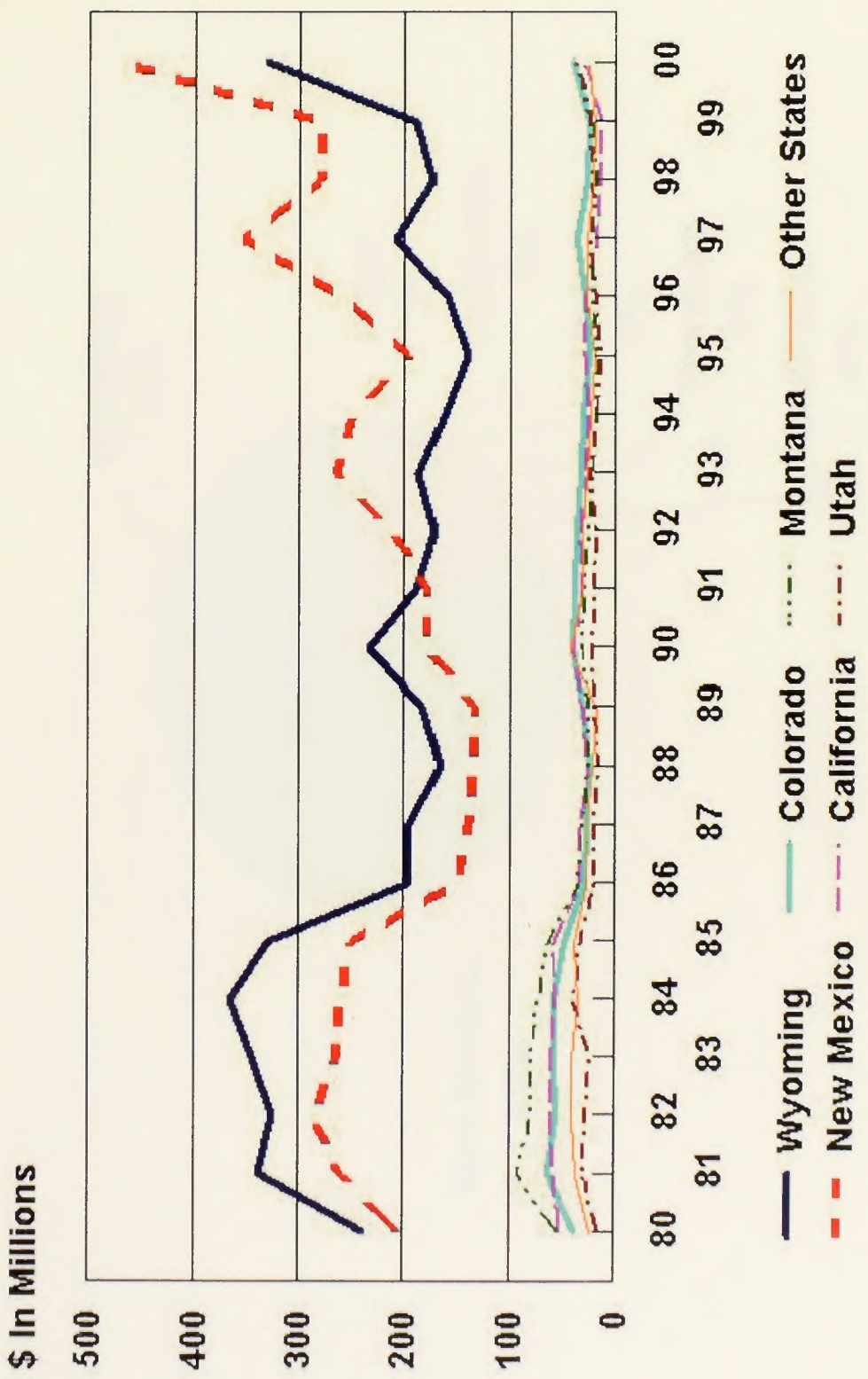
FEDERAL ONSHORE MINERAL LEASES 2000 GAS PRODUCTION



Source: MMS Mineral Revenues Report 2000, Table 23, pg. 72
By Geographic State, Total Gas Prod. = 2,117 BCF, NM + WY = 86%

Figure 24

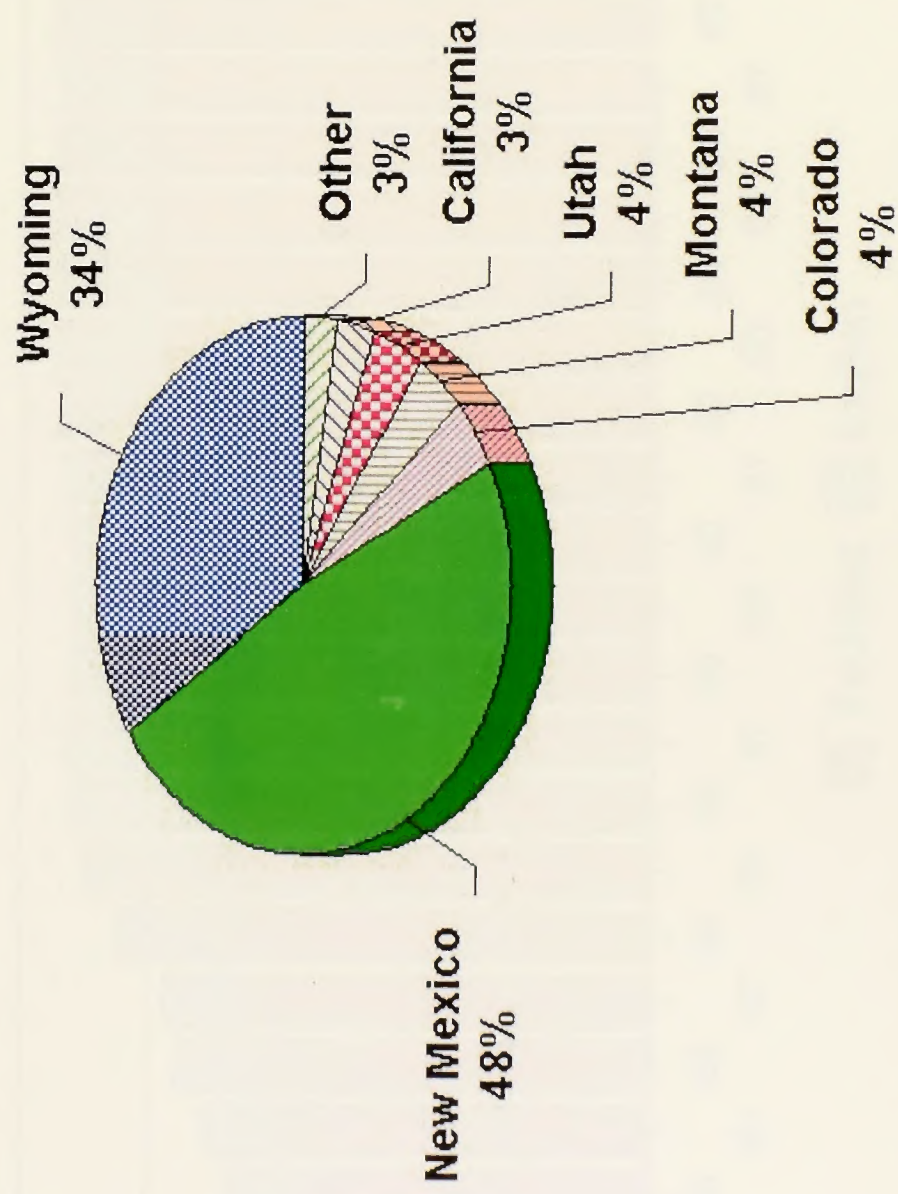
FEDERAL ONSHORE OIL AND GAS ROYALTIES RECEIVED 1980 - 2000



Source: MMS Mineral Revenues Reports 1980-2000, Table 22
Royalties by BLM Admin. State, Total Oil/Gas Royalties for 2000 = \$967.8 MM

Figure 25

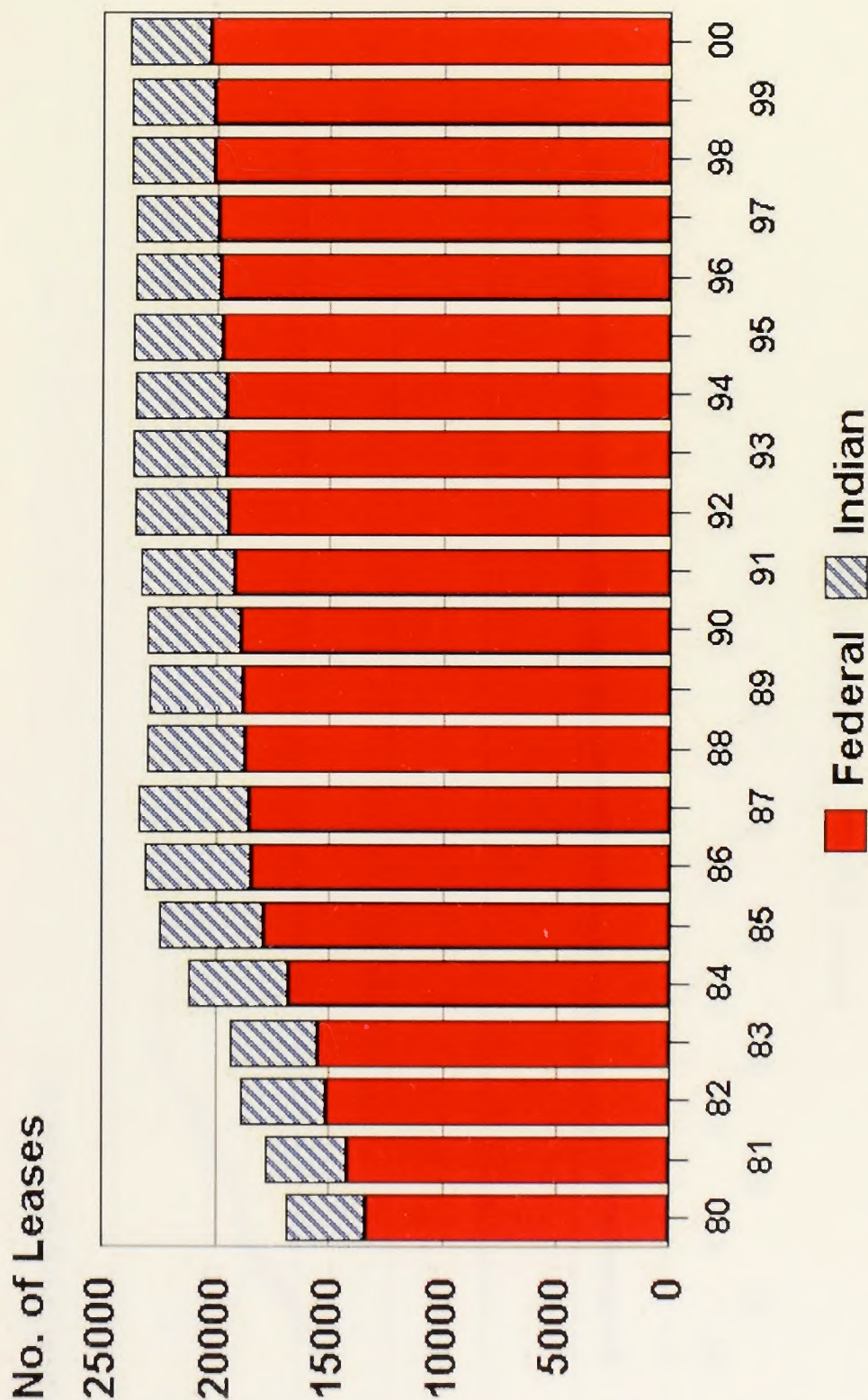
FEDERAL OIL AND GAS ROYALTIES RECEIVED IN CY 2000 - \$(MILLIONS)



Source: MMS Minerals Revenue Report 2000, Table 22
Royalties by BLM State Jurisdiction, Total Revenues = \$967.8 MM

Figure 26

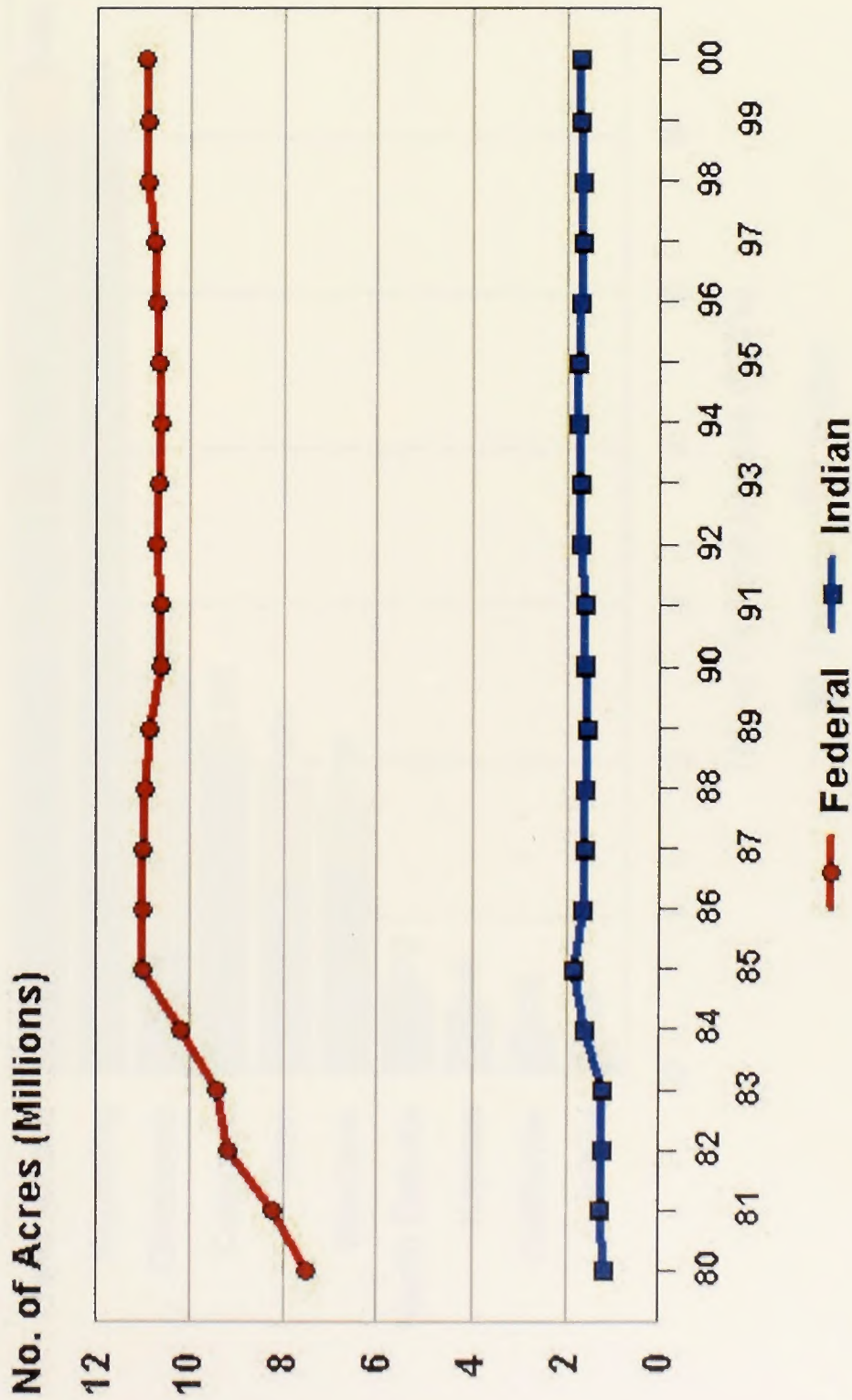
FEDERAL AND INDIAN ONSHORE PRODUCING AND PRODUCIBLE OIL/GAS LEASES



Source: MMS Mineral Rev. Reports 1980-00, Table 38, pg. 119, Yearly Data As Of December 31
Total 12/31/00 = 20,219 Fed. + 3,625 Ind. = 23,844 Leases

Figure 27

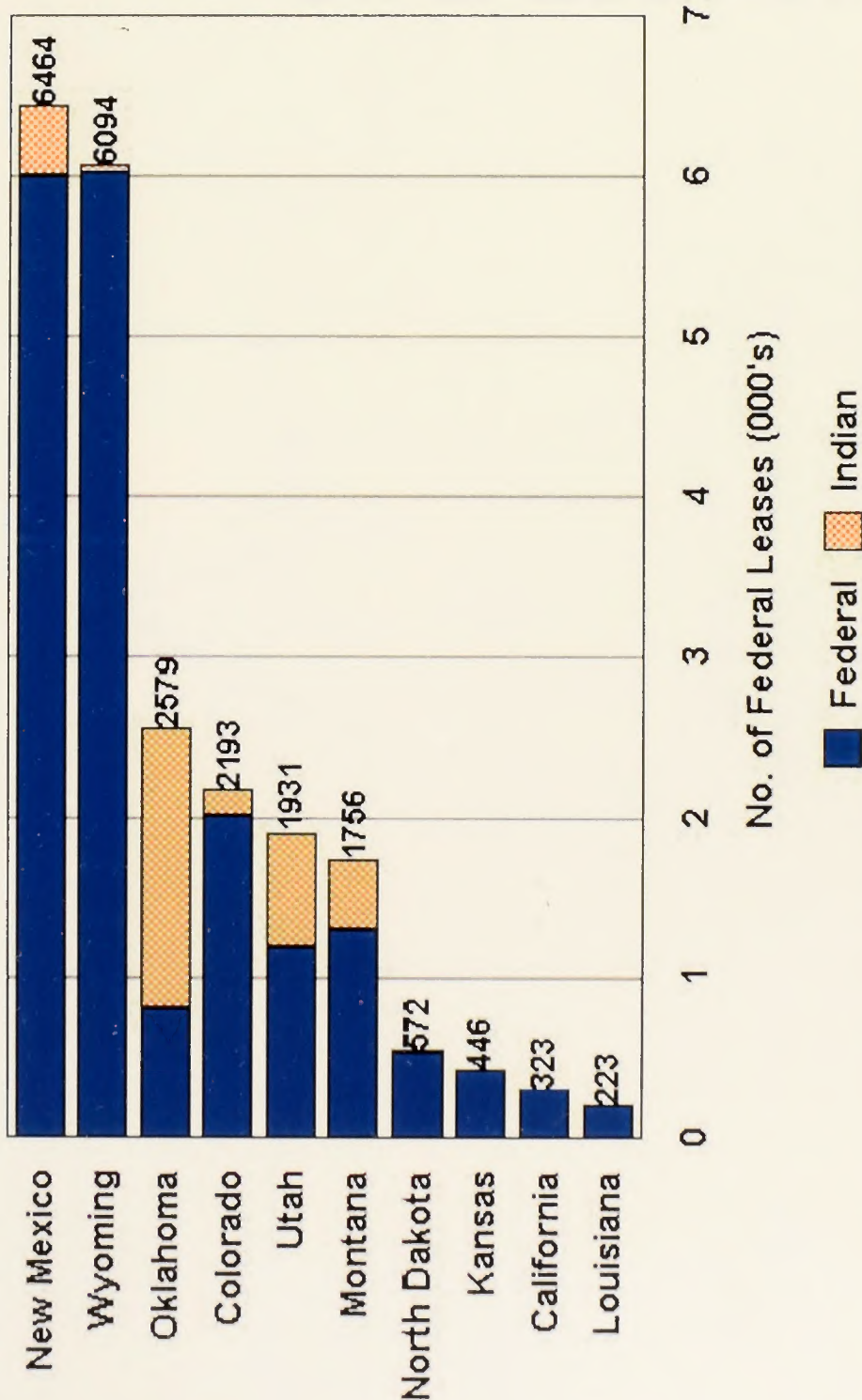
FEDERAL AND INDIAN ONSHORE PRODUCTION AND PRODUCIBLE OIL/GAS LEASE ACRES



Source: MMS Mineral Rev. Reports 1980-00, Table 38, pg. 119, Yearly Data As Of December 31
Total 12/31/00 Acres = 10,961,658 Fed. + 1,685,350 Ind. = 12,647,008 Acres

Figure 28

FEDERAL AND INDIAN ONSHORE PRODUCING AND PRODUCIBLE OIL/GAS LEASES (TOP TEN STATES)



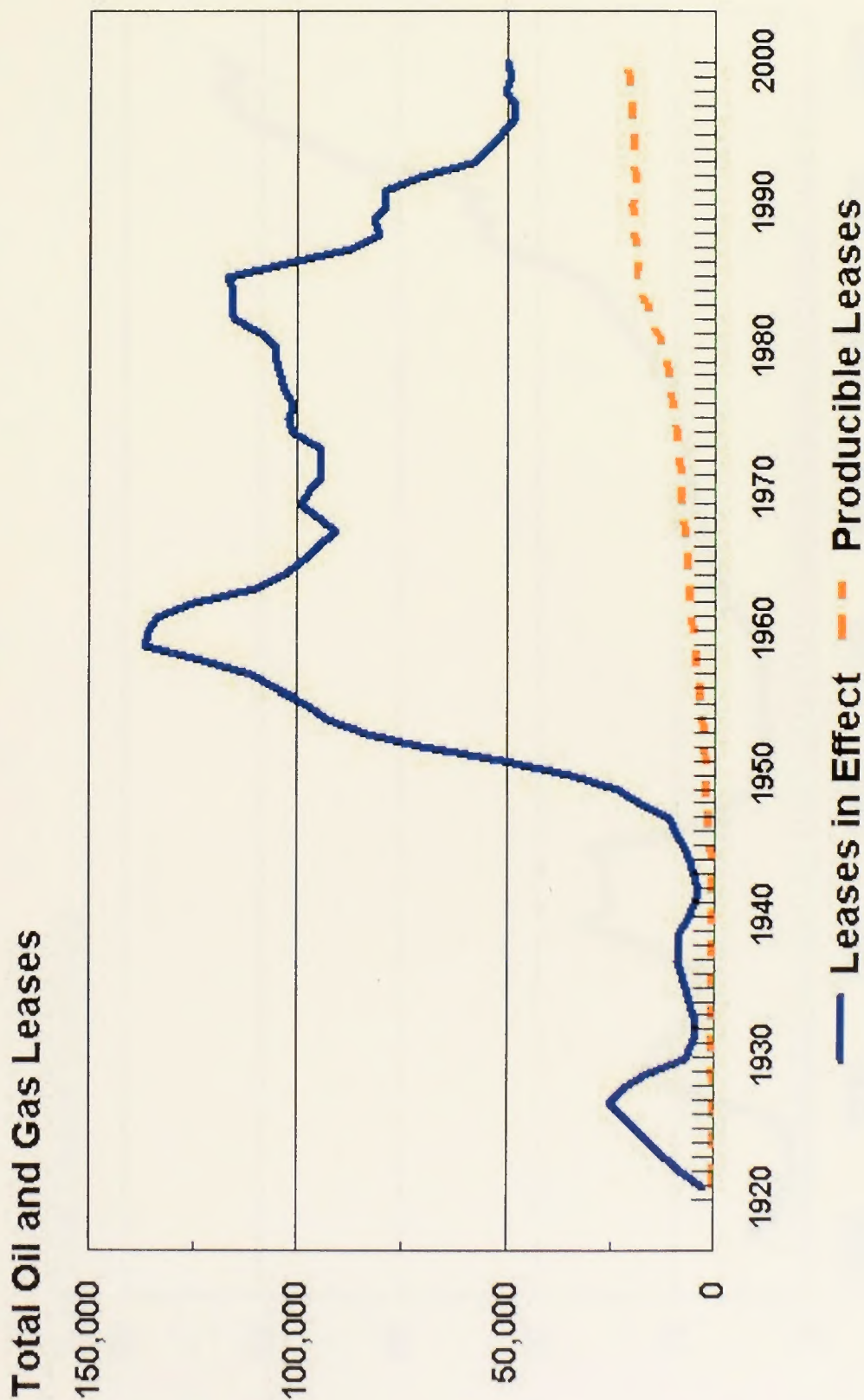
Source: MMS Mineral Revenues 2000 Report, Table 37, pg. 118, NM+WY=53%
Total Federal Onshore Leases as of 12/31/00 = 23,844 By Geographic State
AR-192, TX-207, OH-167, WV-159, MS-94, SD-75, NV-37, MI-70, Other-262

Figure 29

Public Lands Oil & Gas Activity



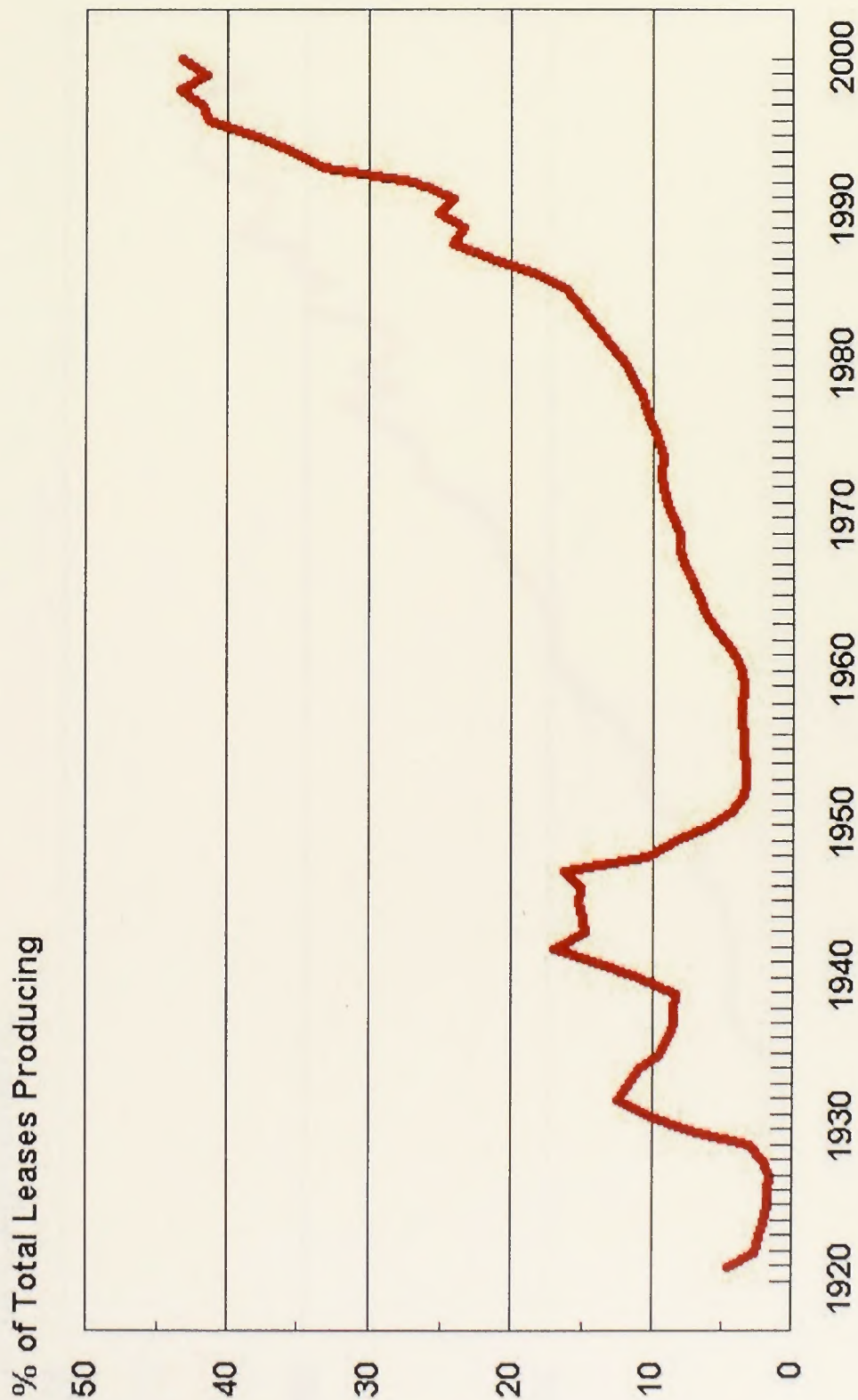
OIL AND GAS LEASES UNDER SUPERVISION ON PUBLIC LANDS



USGS Statistics Book, June, 1981, pg. 20-21, Public Land Statistics 1981-00, Tables 3-13, 14, 15, 17
Does not include Acquired, OCS, Military, Indian, or NPR lands. CYS=1944-80, FY 00 prelim.

Figure 30

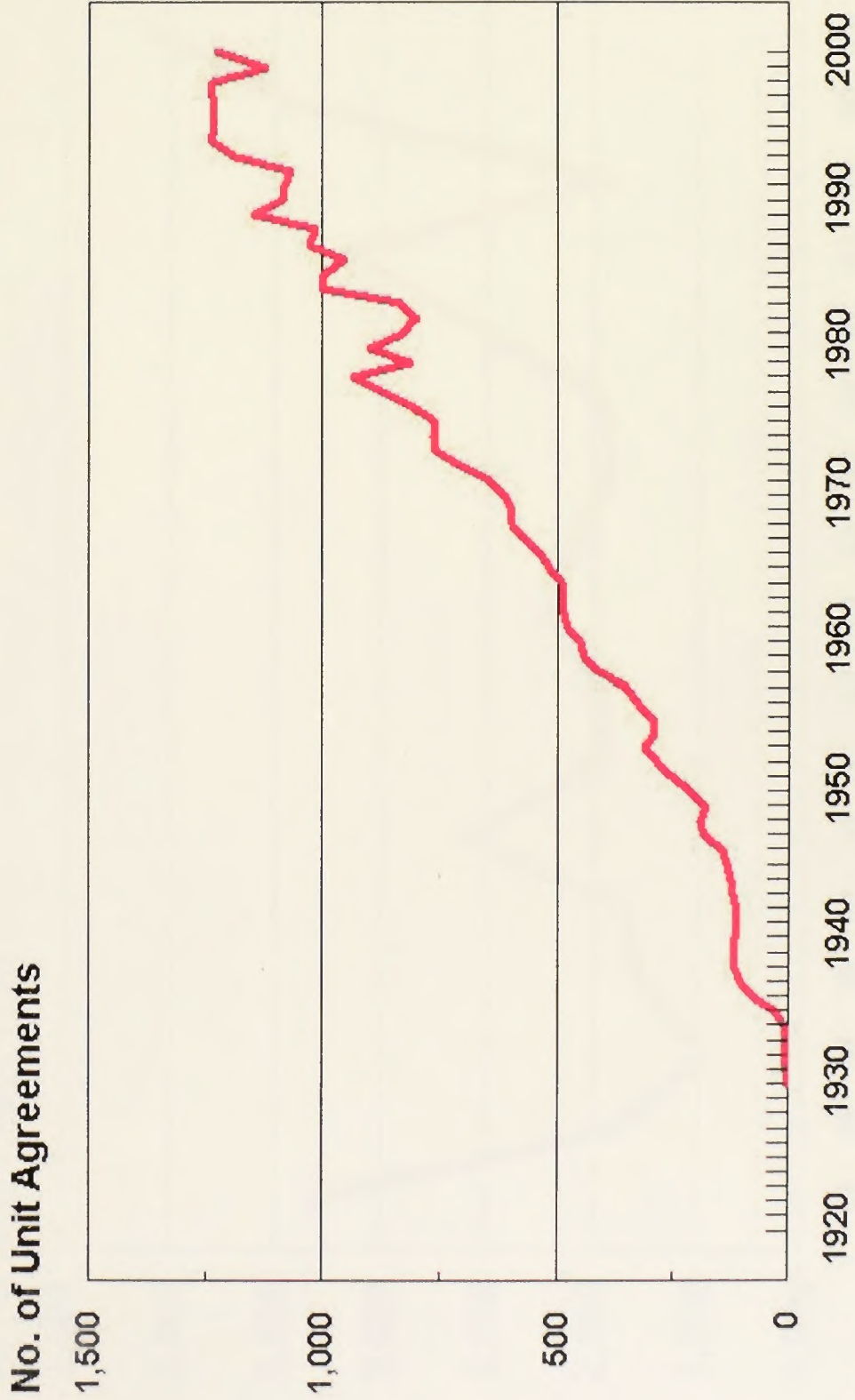
PUBLIC LANDS - % OF TOTAL OIL AND GAS LEASES PRODUCING (Actual and Allocated)



USGS Statistics Book, June, 1981, pg. 20-21, Public Land Statistics 1981-00
Does not include Acquired, OCS, Military, Indian, or NPR lands. CY's=1944-80

Figure 31

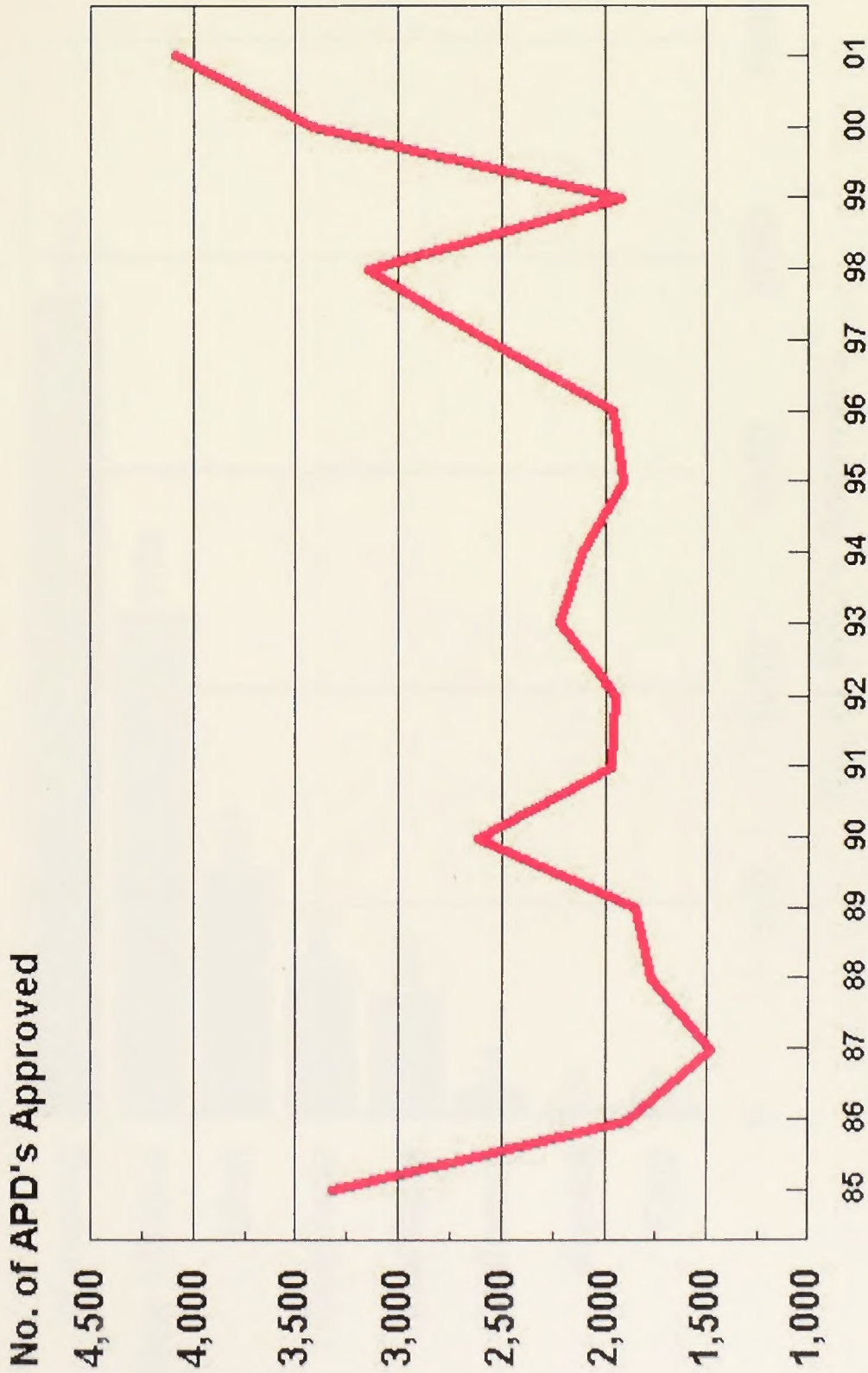
FEDERAL OIL AND GAS UNIT AGREEMENTS



USGS Statistics Book, June, 1981, pg. 20-21, Public Land Statistics 1981-00, Table 3-17,
Data estimated 1981-84, 92. Low product prices in 1999. FY 00 = 1,227 units in effect

Figure 32

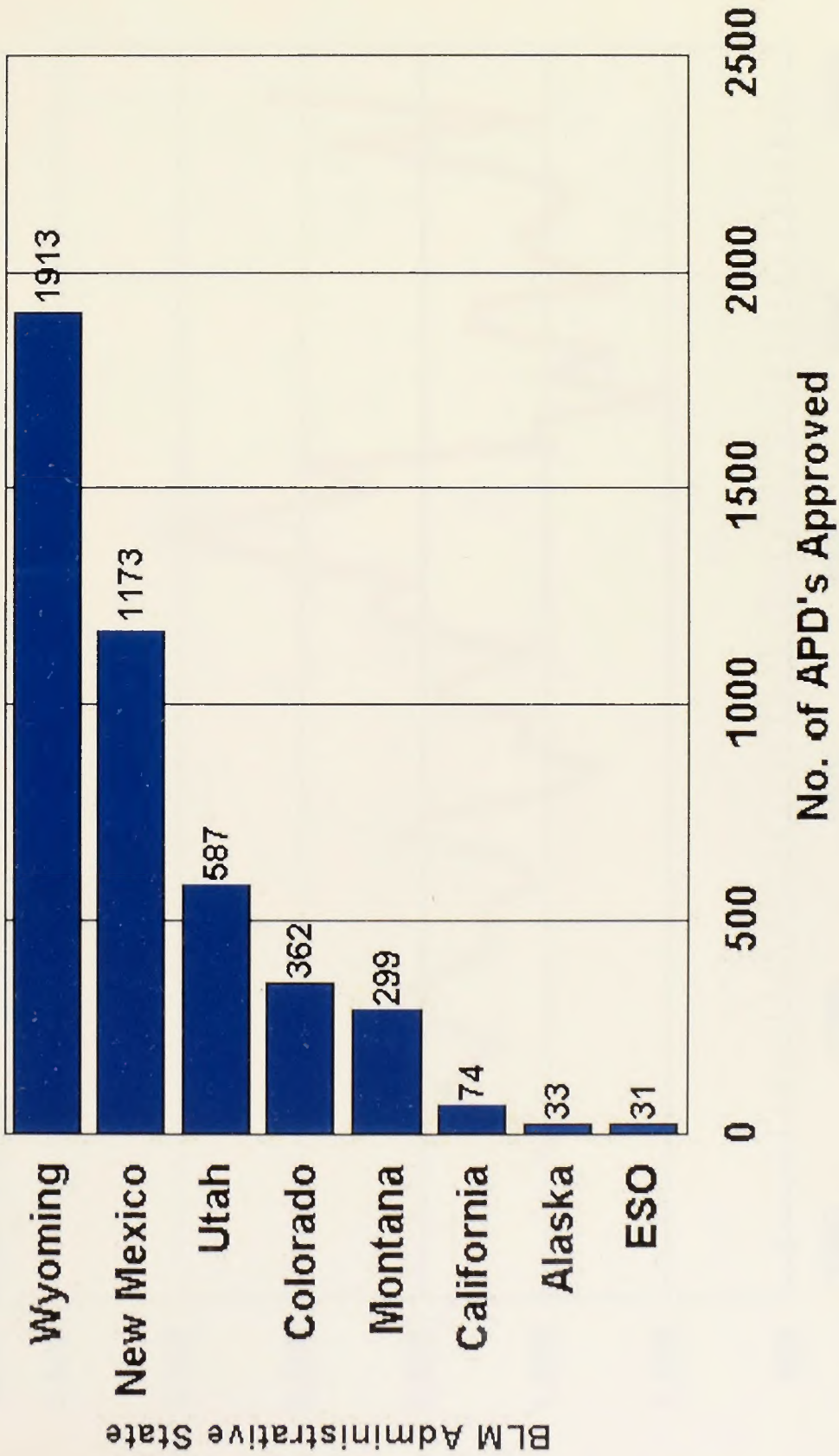
BLM - OIL AND GAS DRILLING PERMITS (APD'S) APPROVED



Public Land Statistics 1985-00, Table 3-16, pg. 117, FY data.
FY 2001 (est.) = 4,084 Federal APD's approved (45% in Wyoming)

Figure 33

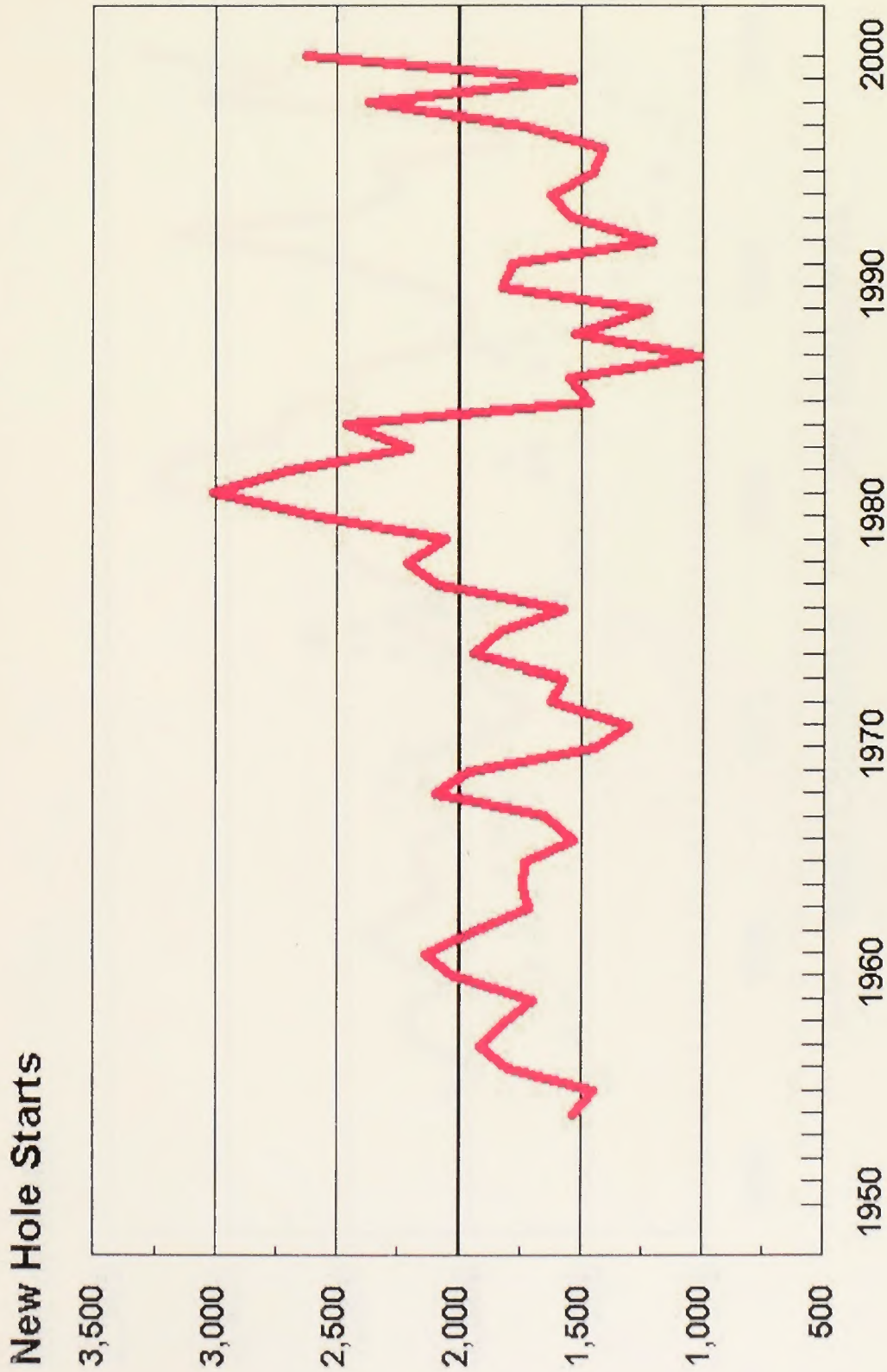
BLM - APD's APPROVED (FEDERAL AND INDIAN) FY 2001



Source: AFMSS, Rollup Report - 11/9/01
Total APD's FY 2001 = 4472, WY (43%) + NM (26%) = 69%

Figure 34

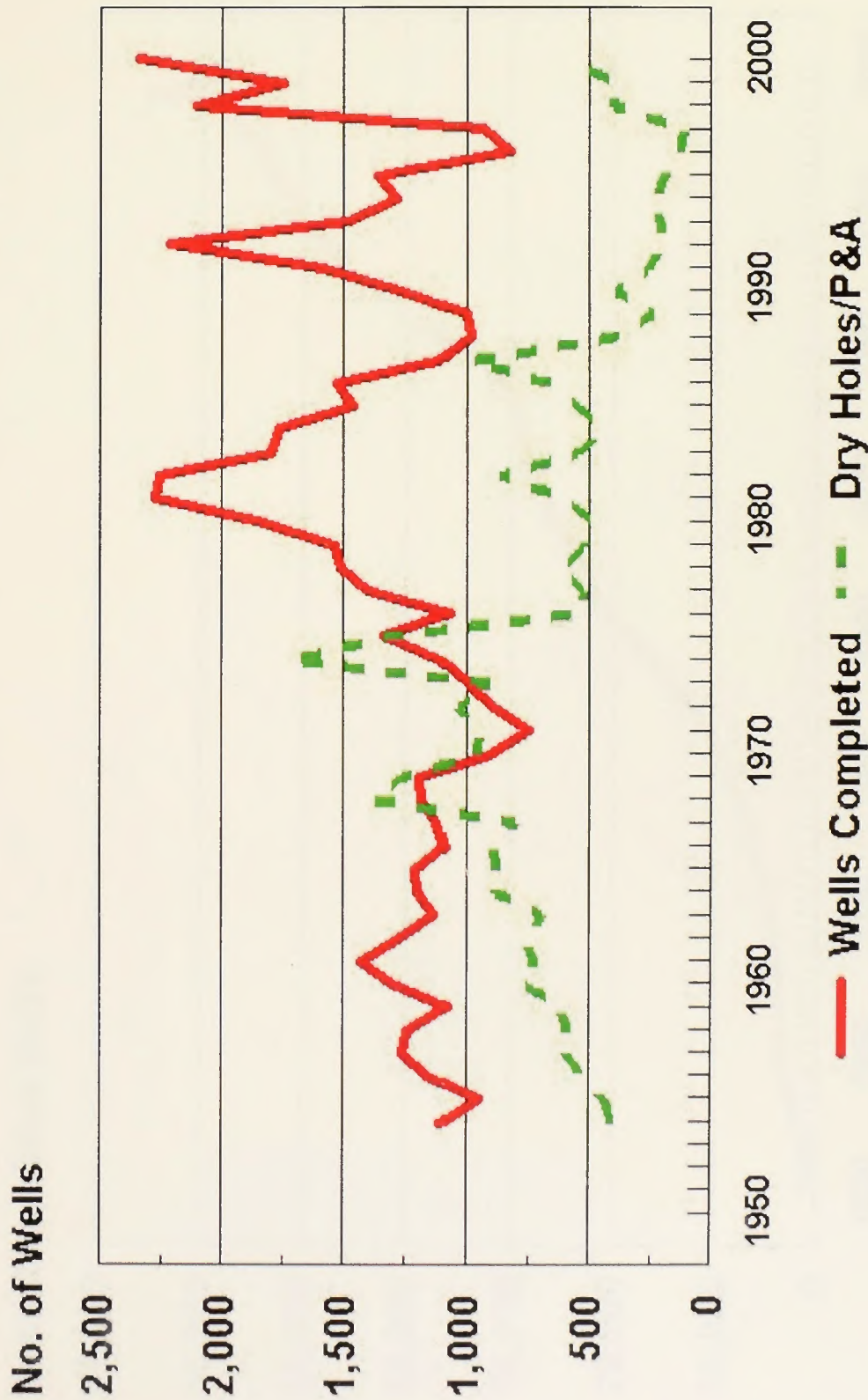
PUBLIC LANDS - NEW OIL AND GAS HOLE STARTS



USGS Statistics Book, June, 1981, pg. 20-21, Public Land Statistics 1985-00, Table 3-16
BLM QFMR, 1983 data estimated, FY data.

Figure 35

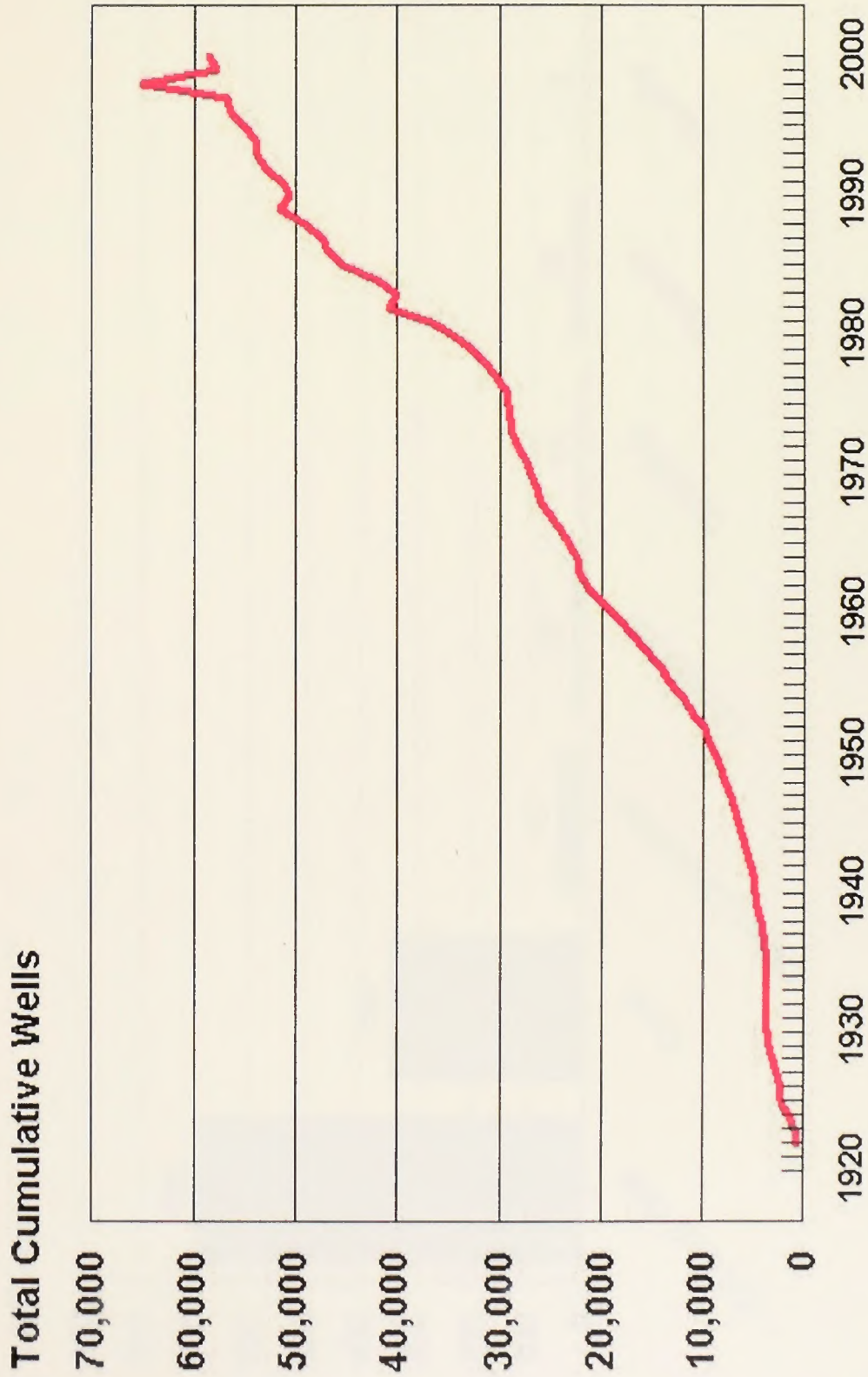
PUBLIC LANDS - NEW OIL AND GAS WELL ACTIVITY



USGS Statistics Book, June, 1981, pg. 2-21, Public Land Statistics 1985-00, Table 3-16
BLM QFMR, FY 83 estimated, P&A = Plugged & Abandoned, FY data.

Figure 36

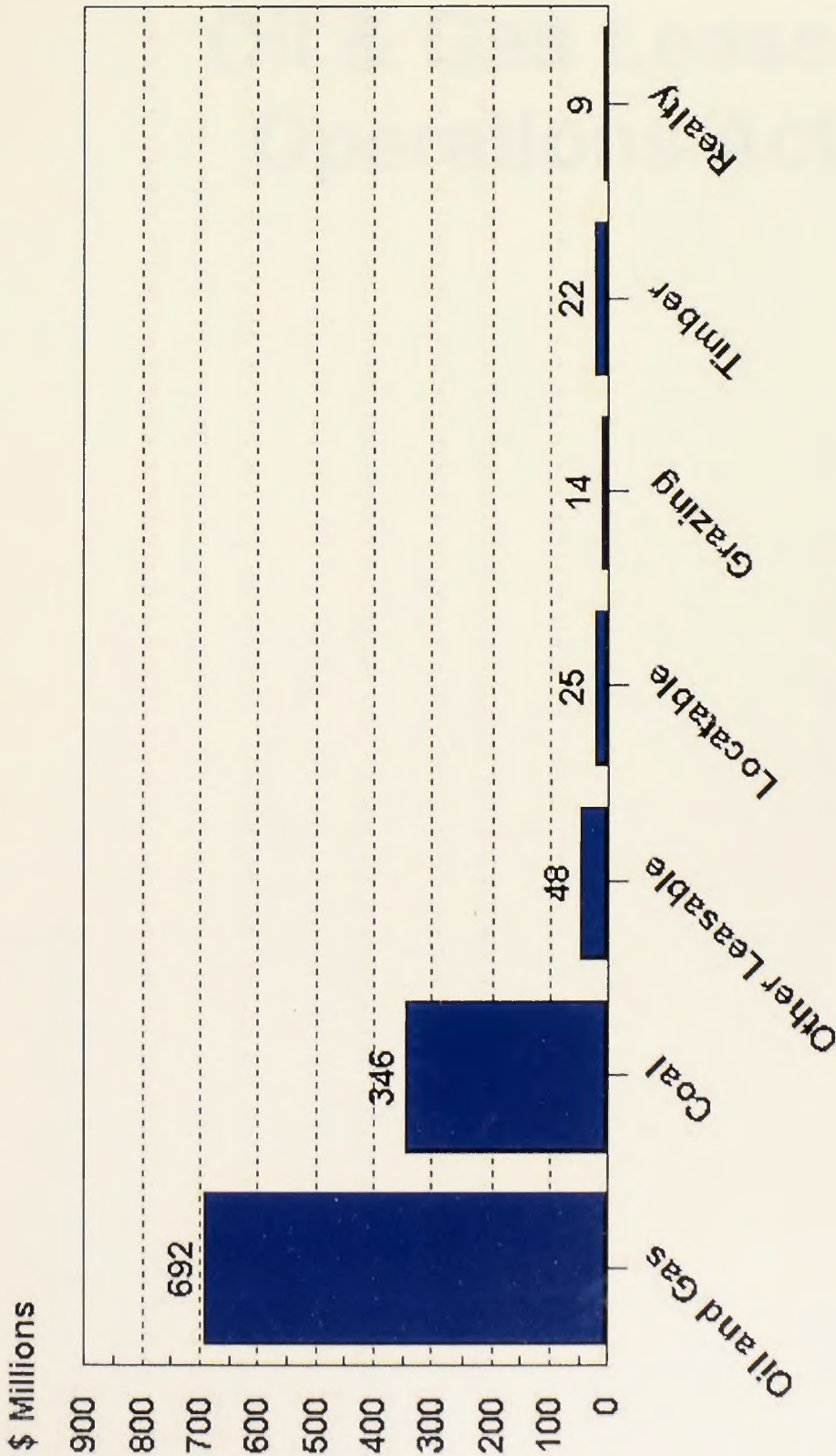
PUBLIC LANDS - FEDERAL OIL AND GAS COMPLETED HOLES



USGS Statistics Book, June, 1981, pg. 20-21, Public Land Statistics 1981-00, Table 3-17 using Producible and Service Holes
BLM QFMR, 1984 data estimated. AFMSS used starting FY 98. FY data.

Figure 37

REVENUE SOURCES ON THE PUBLIC LANDS



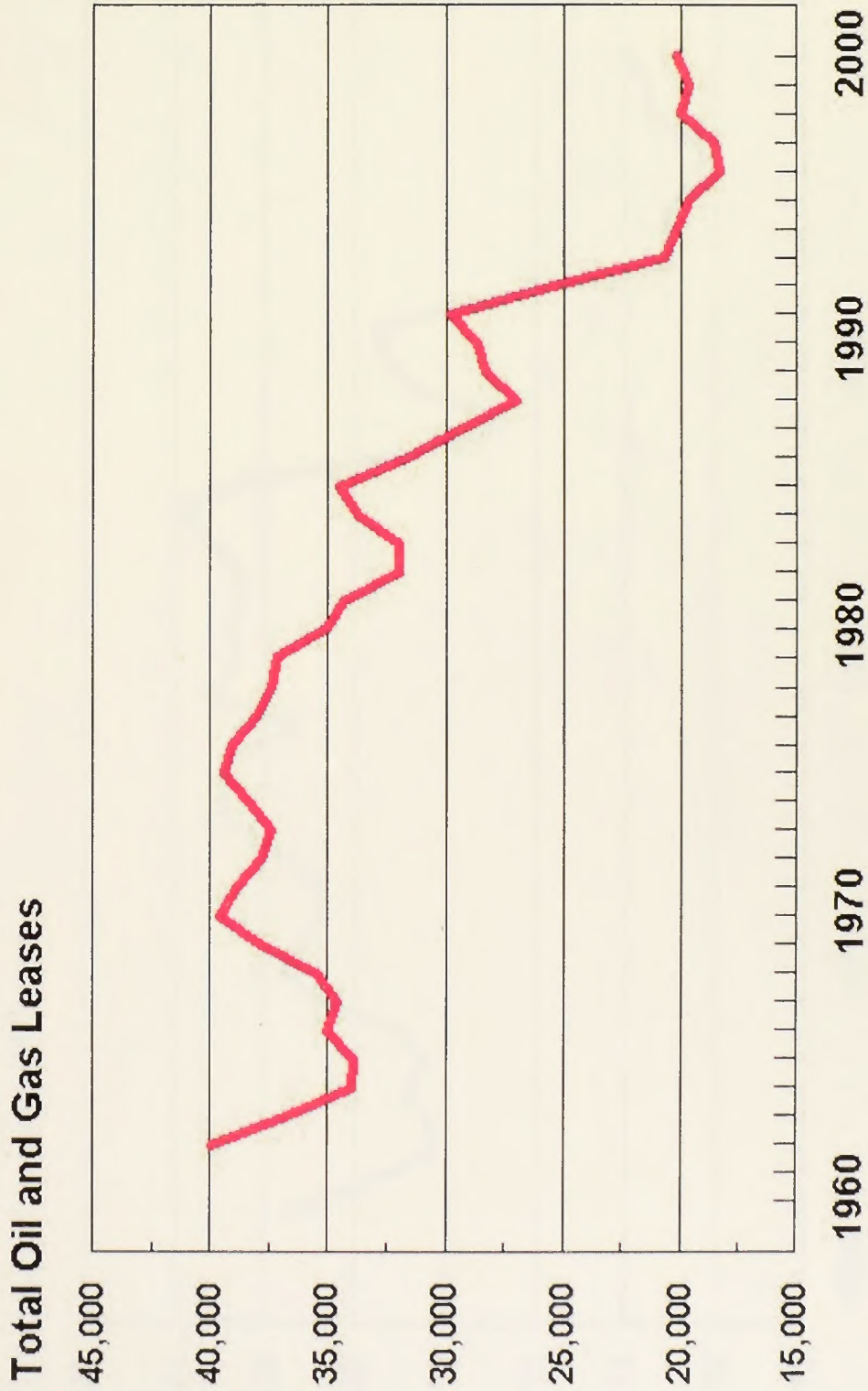
Source: 1999 BLM Annual Report, pg. 9, Oil and Gas includes CO₂, Helium, and Geothermal
BLM Revenue Generated FY 99 = 1.156 Billion (99% Energy & Minerals)

Figure 38

BLM Wyoming Oil & Gas Lease and Operations Activity



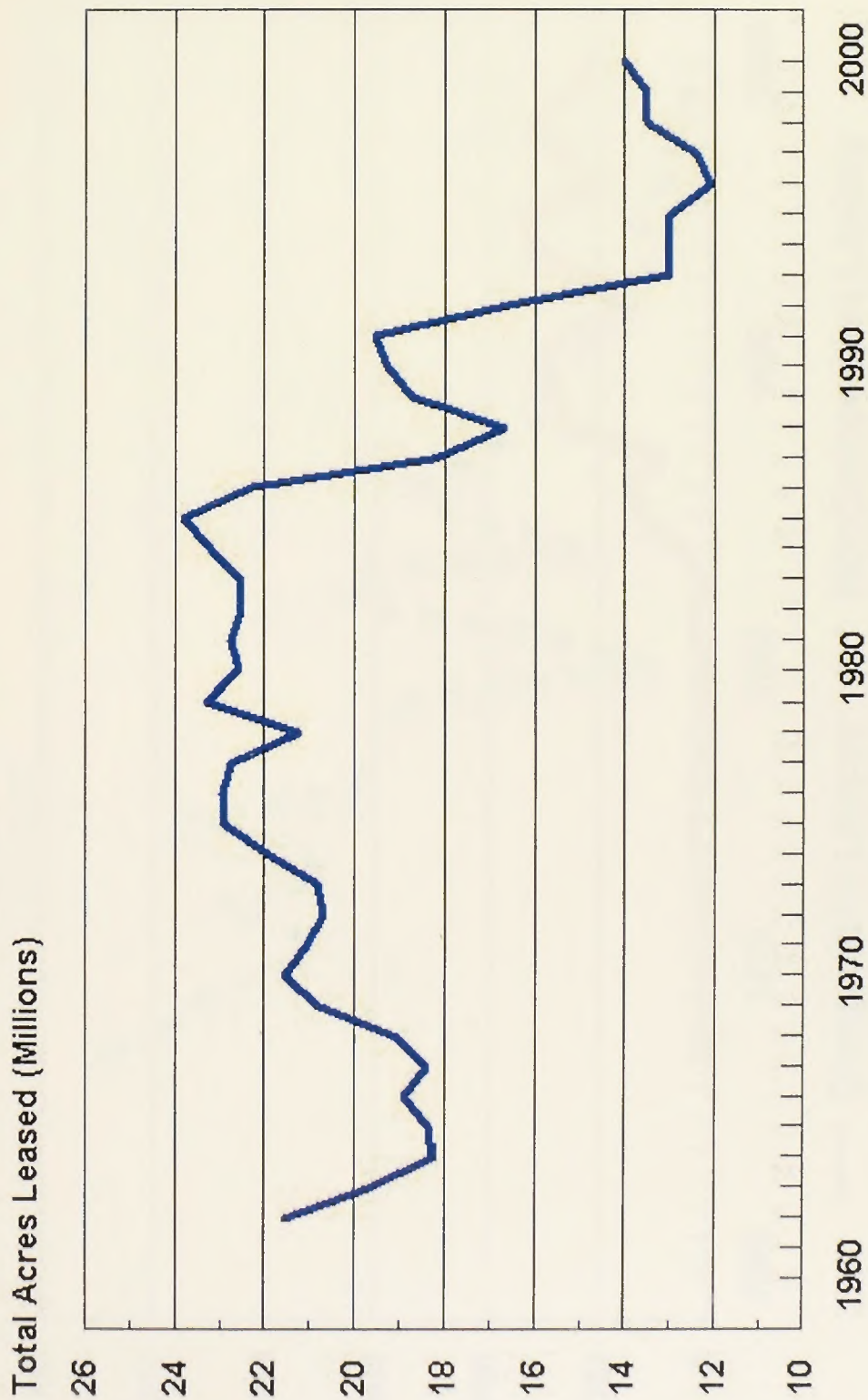
PUBLIC LANDS - OIL AND GAS LEASES UNDER SUPERVISION IN WYOMING



Public Land Statistics 1962-00, FY data.
Data prior to 1986 may include KS and NE leases.

Figure 39

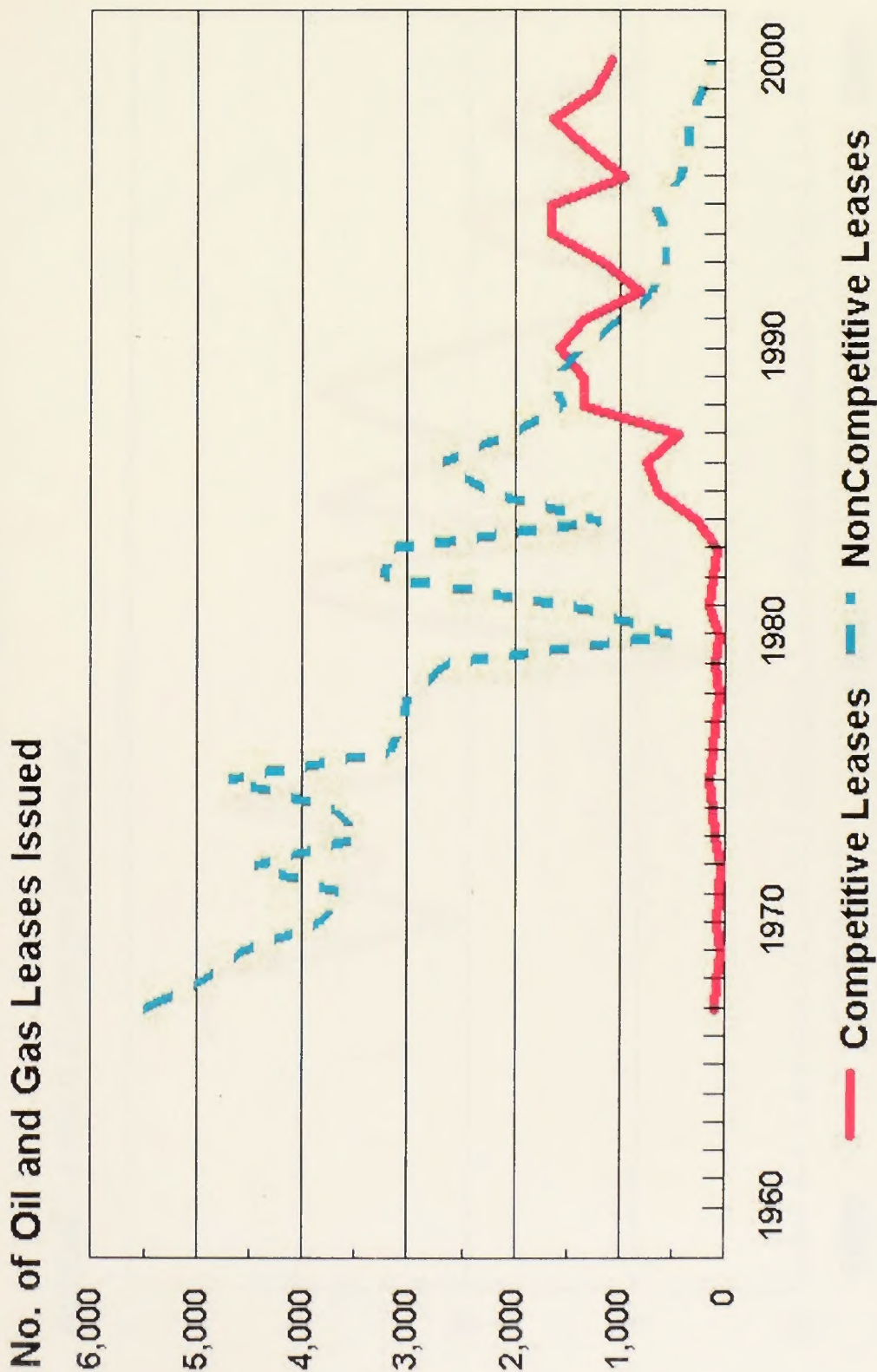
PUBLIC LANDS - OIL AND GAS LEASED ACREAGE UNDER SUPERVISION IN WYOMING



Public Land Statistics 1962-00, FY data.
Data prior to 1986 may include KS and NE data.

Figure 40

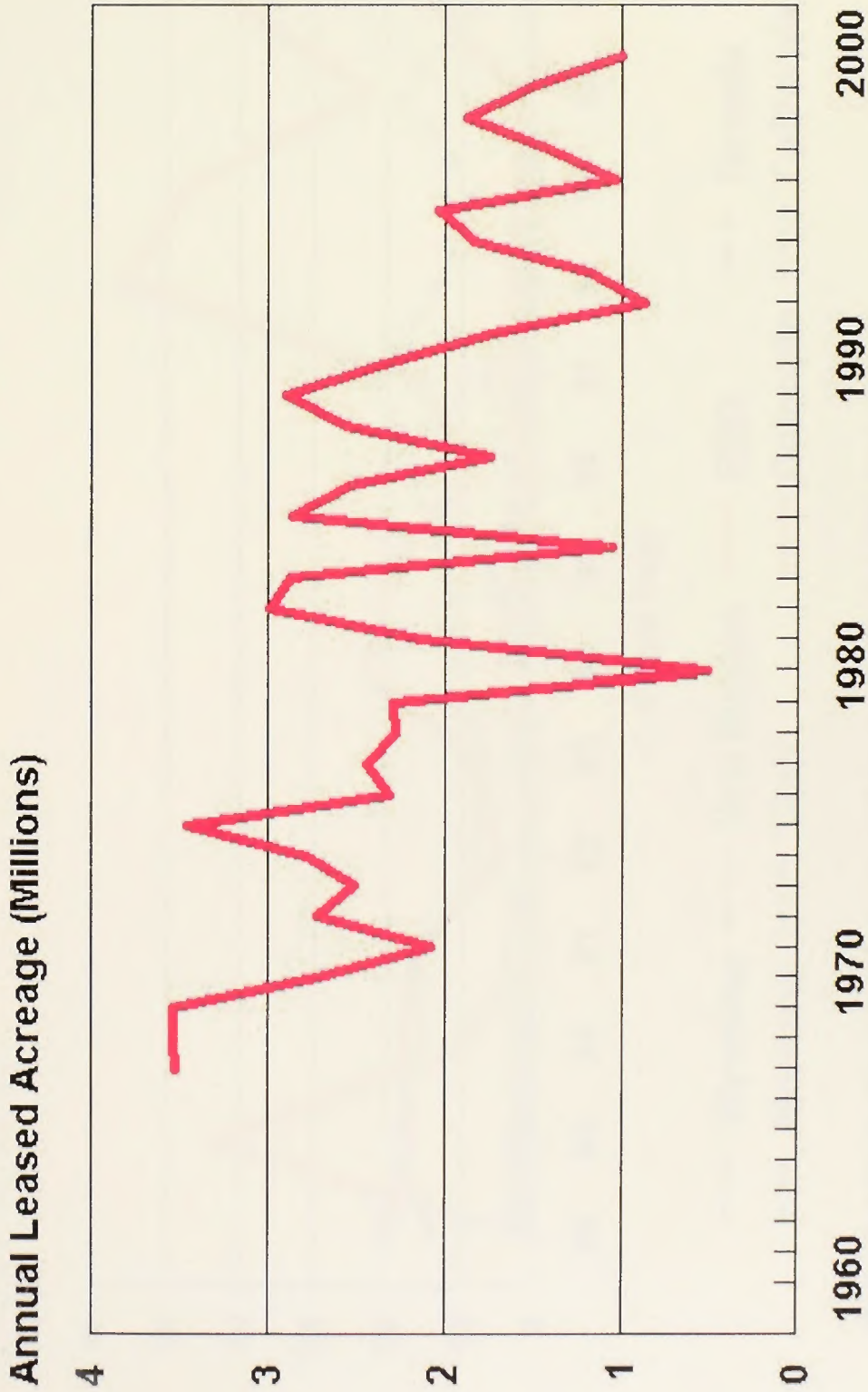
BLM - NO. OF OIL AND GAS LEASES ISSUED IN WYOMING



Public Land Statistics 1967-00, FY data, Leasing Reform Act 12/87.

Figure 41

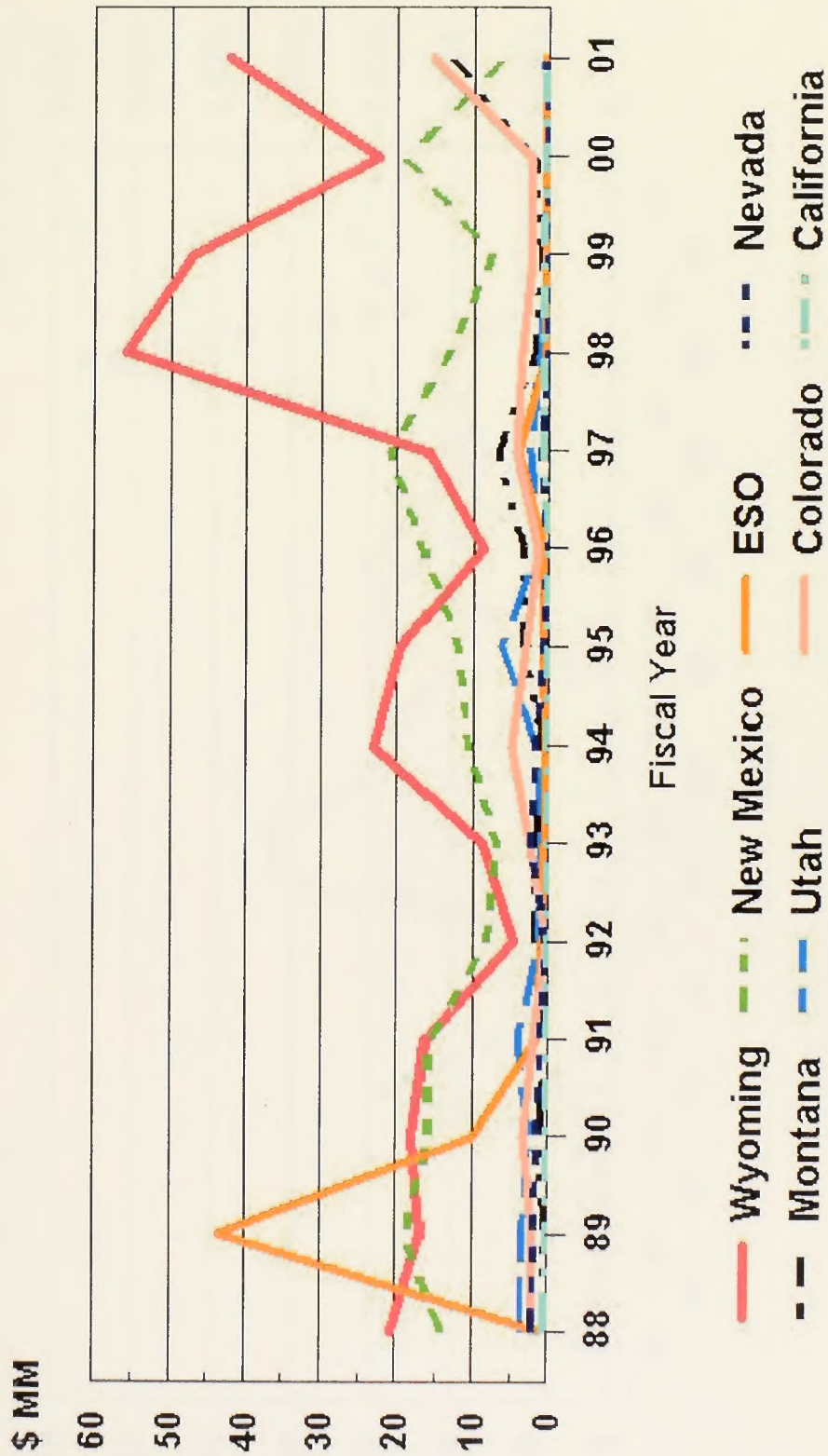
PUBLIC LANDS - ANNUAL LEASED OIL AND GAS ACREAGE IN WYOMING



Public Land Statistics 1967-00, Comp. & NonComp. Lease Sales, FY data.
Data prior to 1986 may contain KS and NE data.

Figure 42

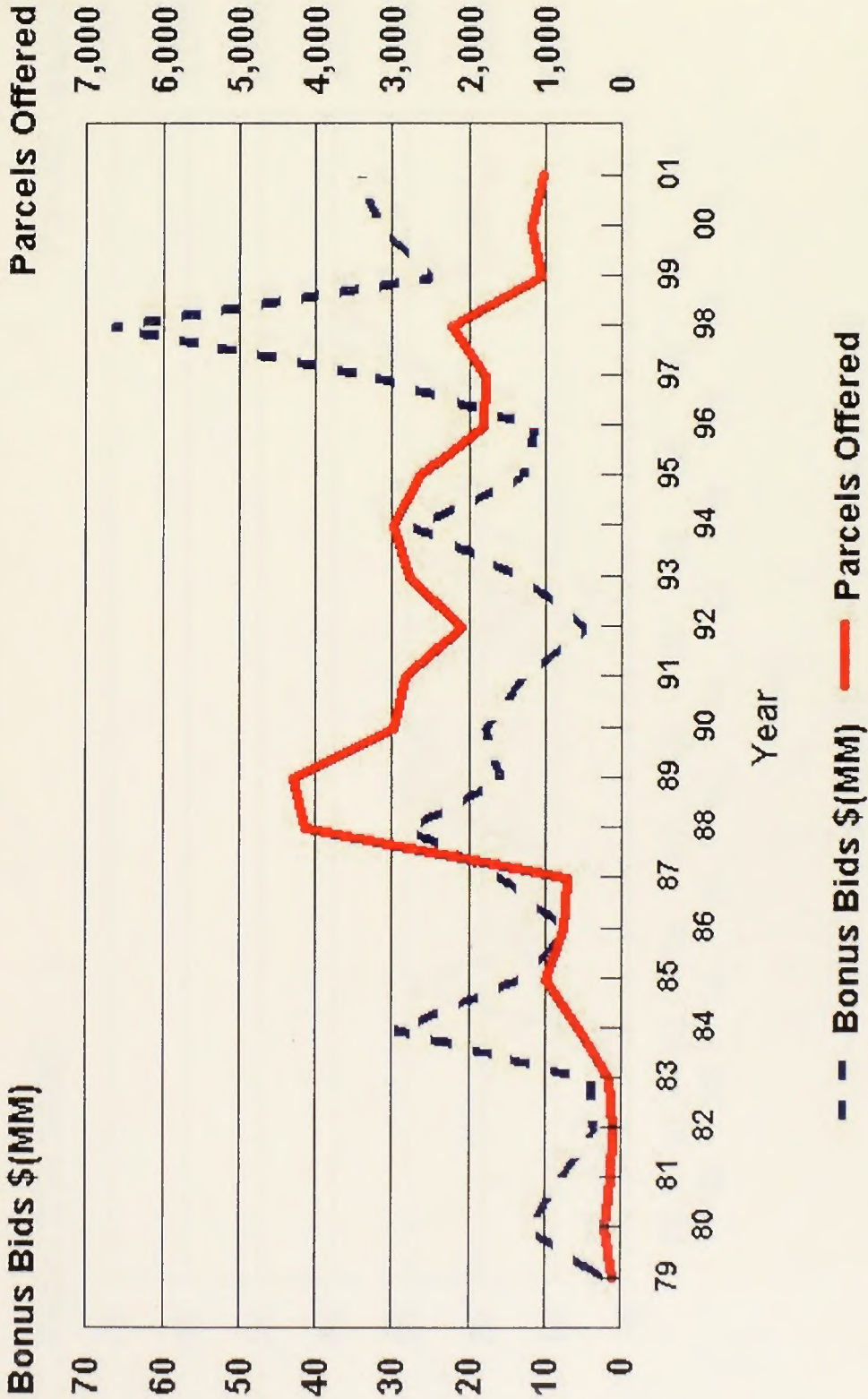
BLM OIL AND GAS COMPETITIVE LEASE SALES BONUS BIDS RECEIVED BY BLM STATE (TOP 8)



Source: BLM Washington Office, Mineral Leasing Database, Prelim. PLS 2000, Table 3-13
Does not include 1st year rental or administrative fees.
Total FY 01 Bonus Bids = 60.5 MM\$ (includes all BLM offices), WY = 70% of total FY 2001 bonus bids

Figure 43

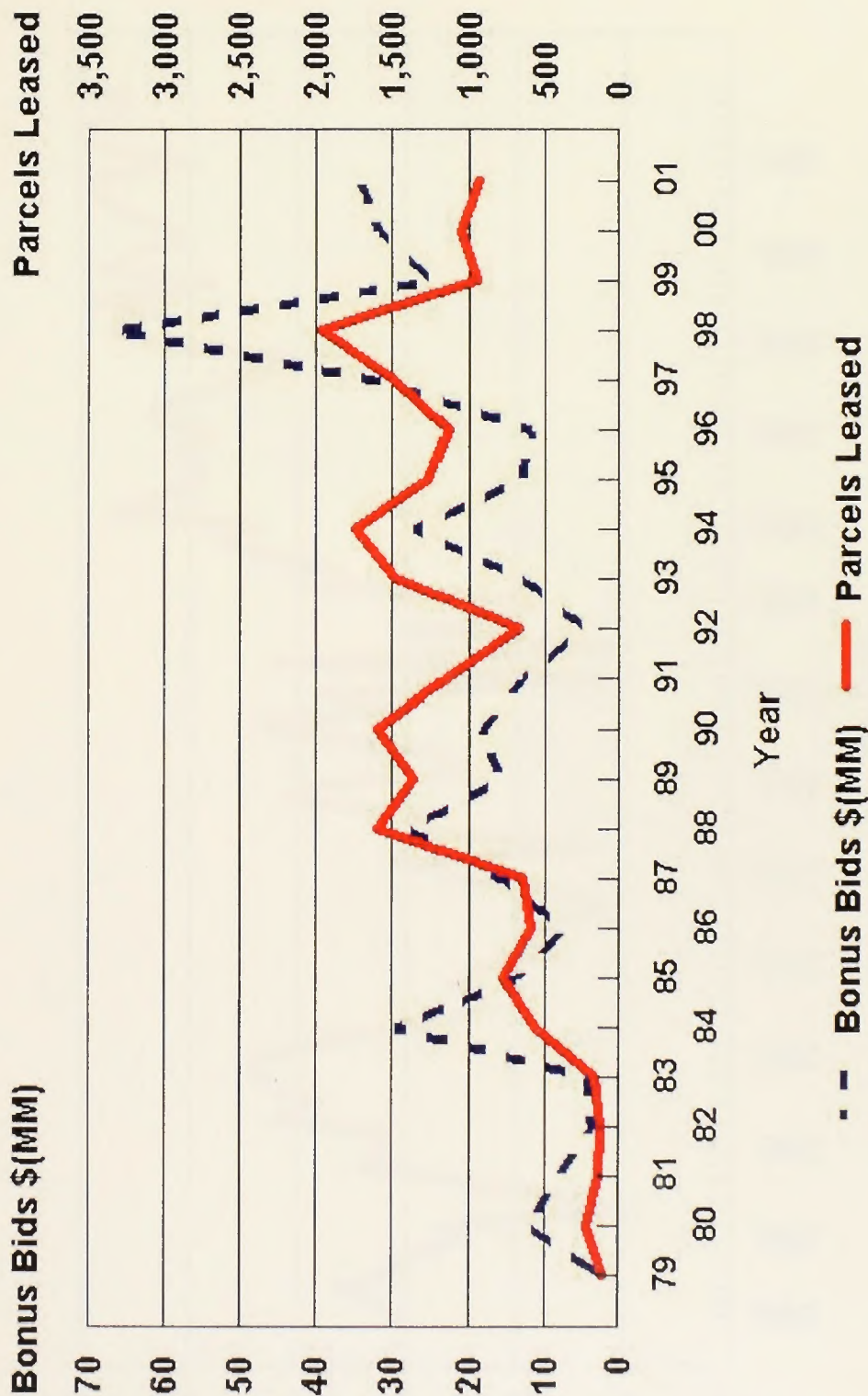
BLM WYOMING OIL AND GAS COMPETITIVE LEASE SALES



Source: Geological Survey of Wyoming/BLM Wyoming. Figures by CY. Oral Auctions start 1988, Nominations 8/96. Not include Rental or Admin. Fees

Figure 44

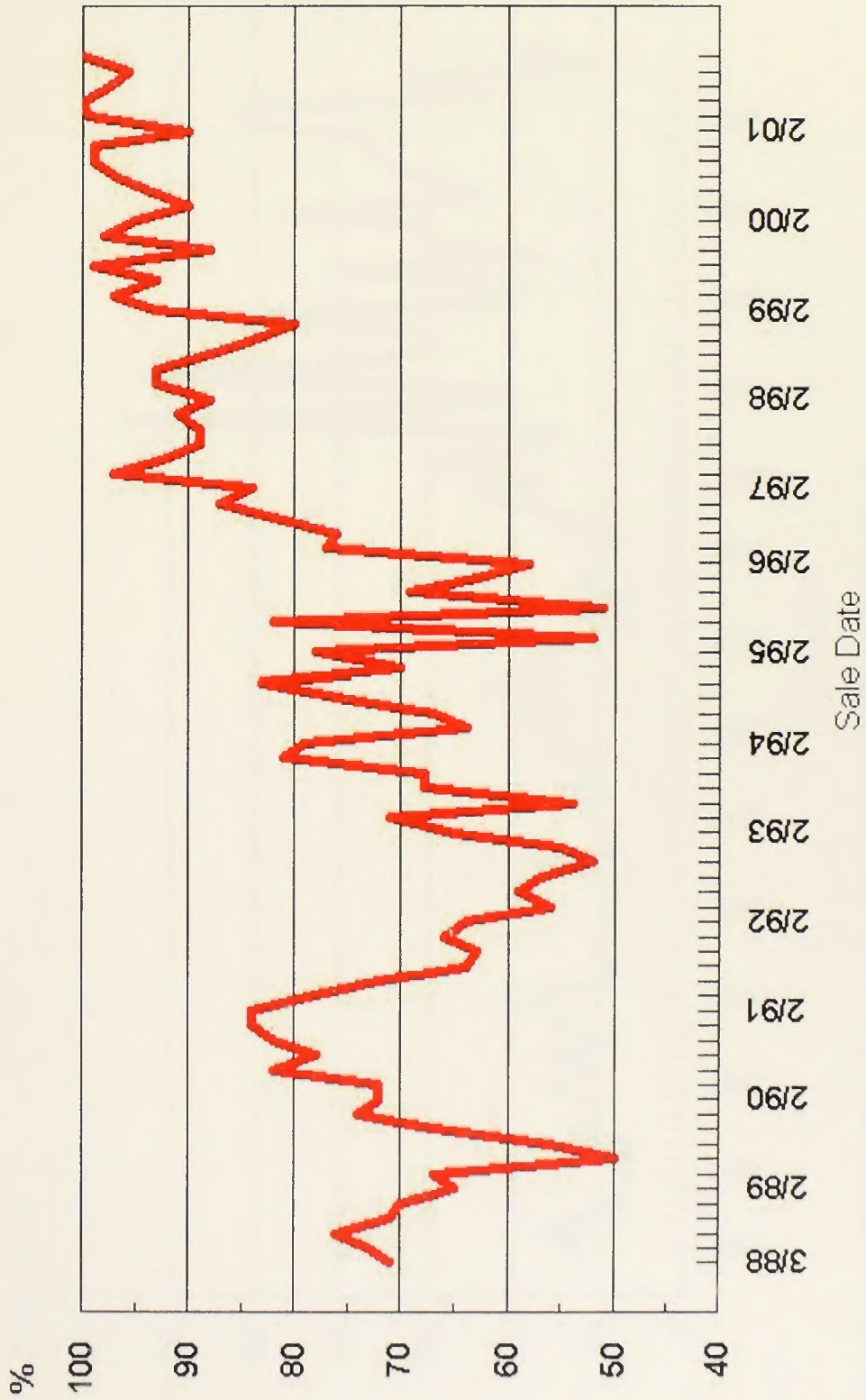
BLM WYOMING OIL AND GAS COMPETITIVE LEASE SALES



Source: Wyoming State Office. Does not include Rental or Admin. Fees.
Figures by CY. Oral Auctions began 1988, All Nominations began 8/96.

Figure 45

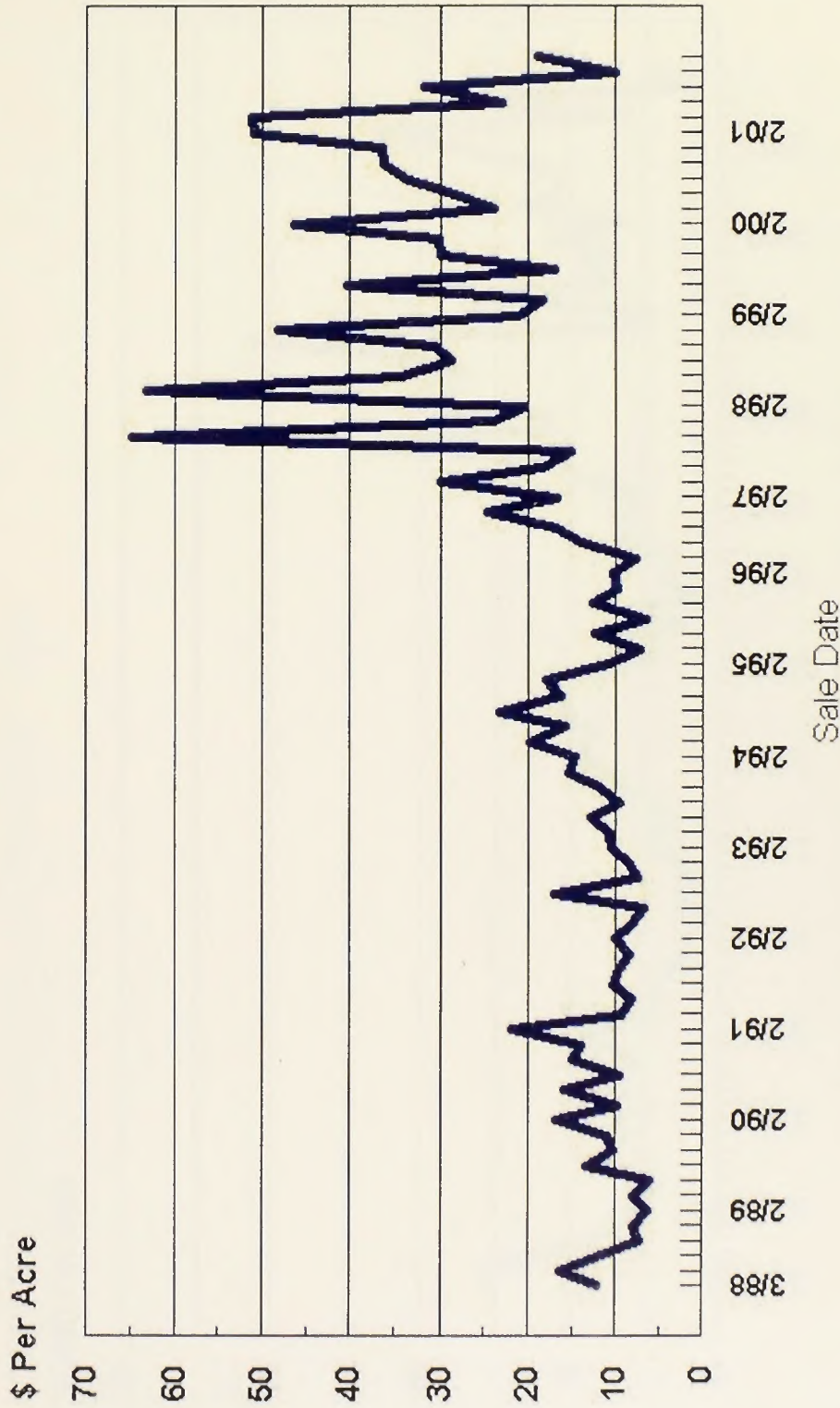
BLM WYOMING OIL AND GAS COMPETITIVE AND NONCOMPETITIVE LEASE SALES - % OF PARCELS LEASED



Source: Wyoming State Office, All Nominated Since 8/96
Lease Sales Held Since 1987 Leasing Reform Act

Figure 46

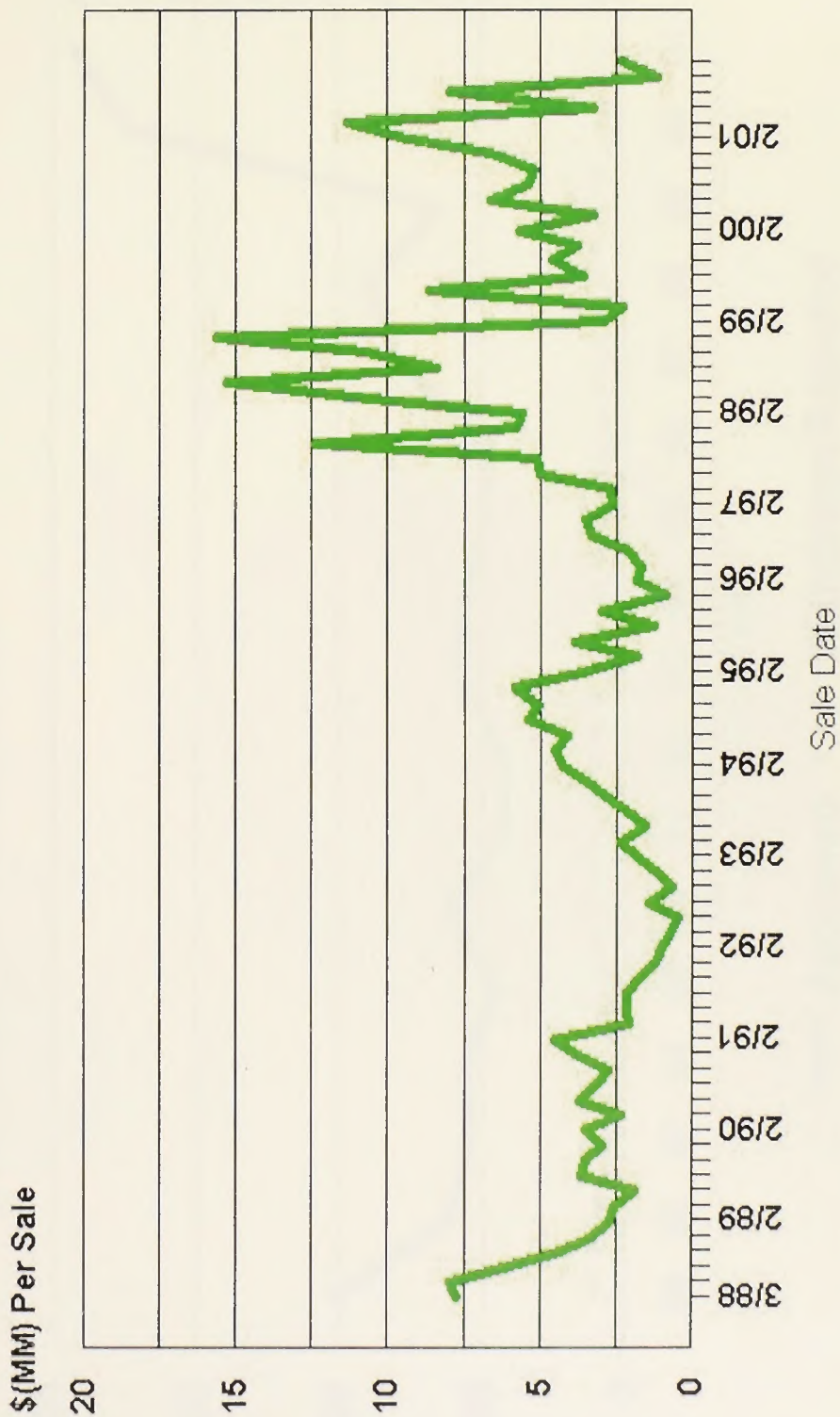
BLM WYOMING OIL AND GAS COMPETITIVE AND NONCOMPETITIVE LEASE SALES - (\$/ACRE SOLD)



Source: Wyoming State Office, Oral Auctions Held Since 1987 Leasing Reform Act
Based on Total Fees Collected (Bonus Bids + Rentals + Admin. Fees)
Began Nominated Parcels Only On Lease Sales 8/96

Figure 47

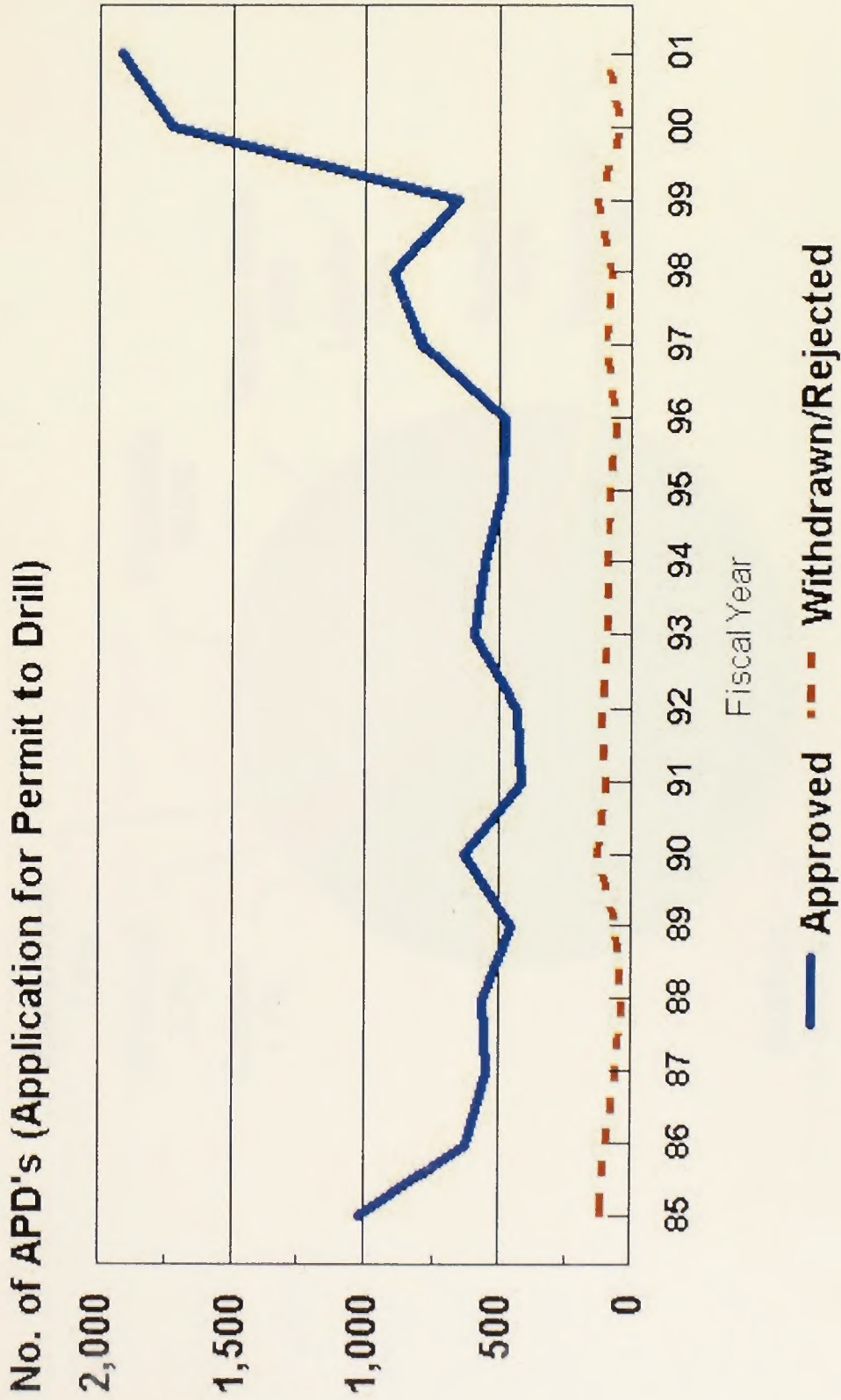
BLM WYOMING OIL AND GAS COMPETITIVE LEASE SALES RECEIPTS DUE



Source: BLM Wyoming State Office, Oral Auctions Since 1987 Leasing Reform Act
Receipts = Bonus Bids, Rental Due, & Admin. Fees
Increased sales in 1998 and late 2000 helped by coalbed methane activity in the PRB

Figure 48

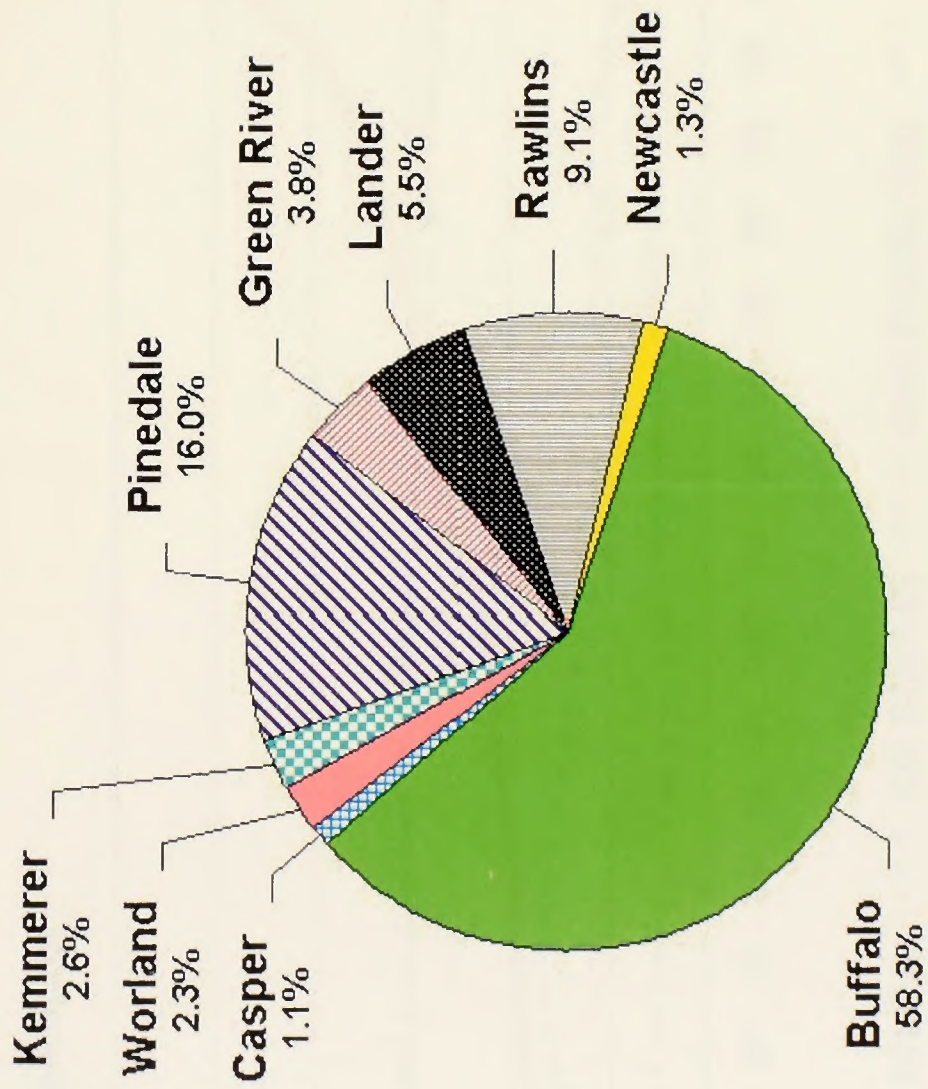
BLM WYOMING - APD ACTIVITY



Source: BLM GFM & AFMSS - Administrative Total WY, NE, MT
FY 01 (prelim.) = 1917 Approved, 97 Withdrawn/Rej.

Figure 49

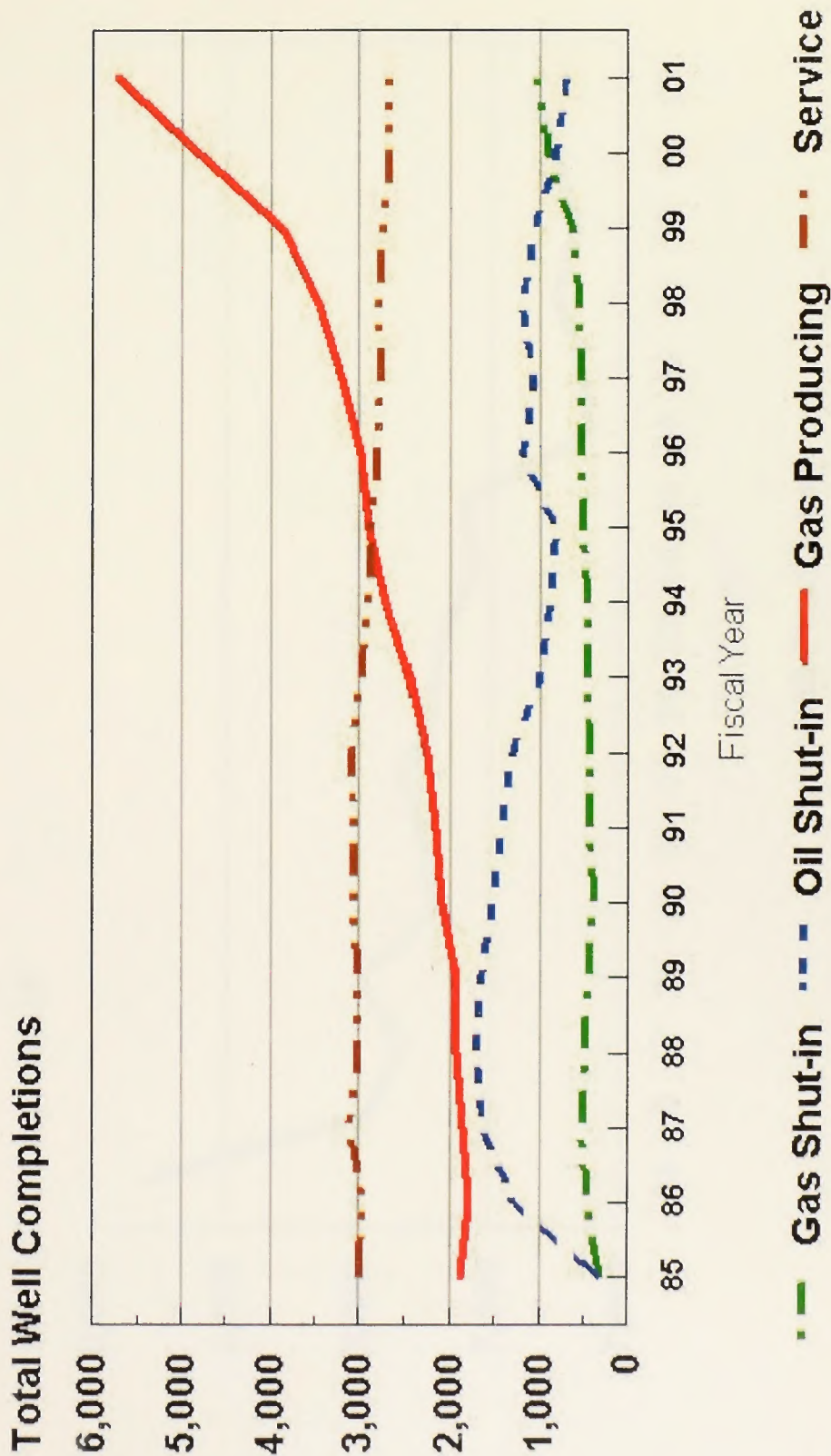
BLM WYOMING - APD'S APPROVED BY FIELD OFFICE FY 2001



Source: BLM AFMSS (FY 01) - Admin, Total WY, NE, MT, Total APD's = 1917

Figure 50

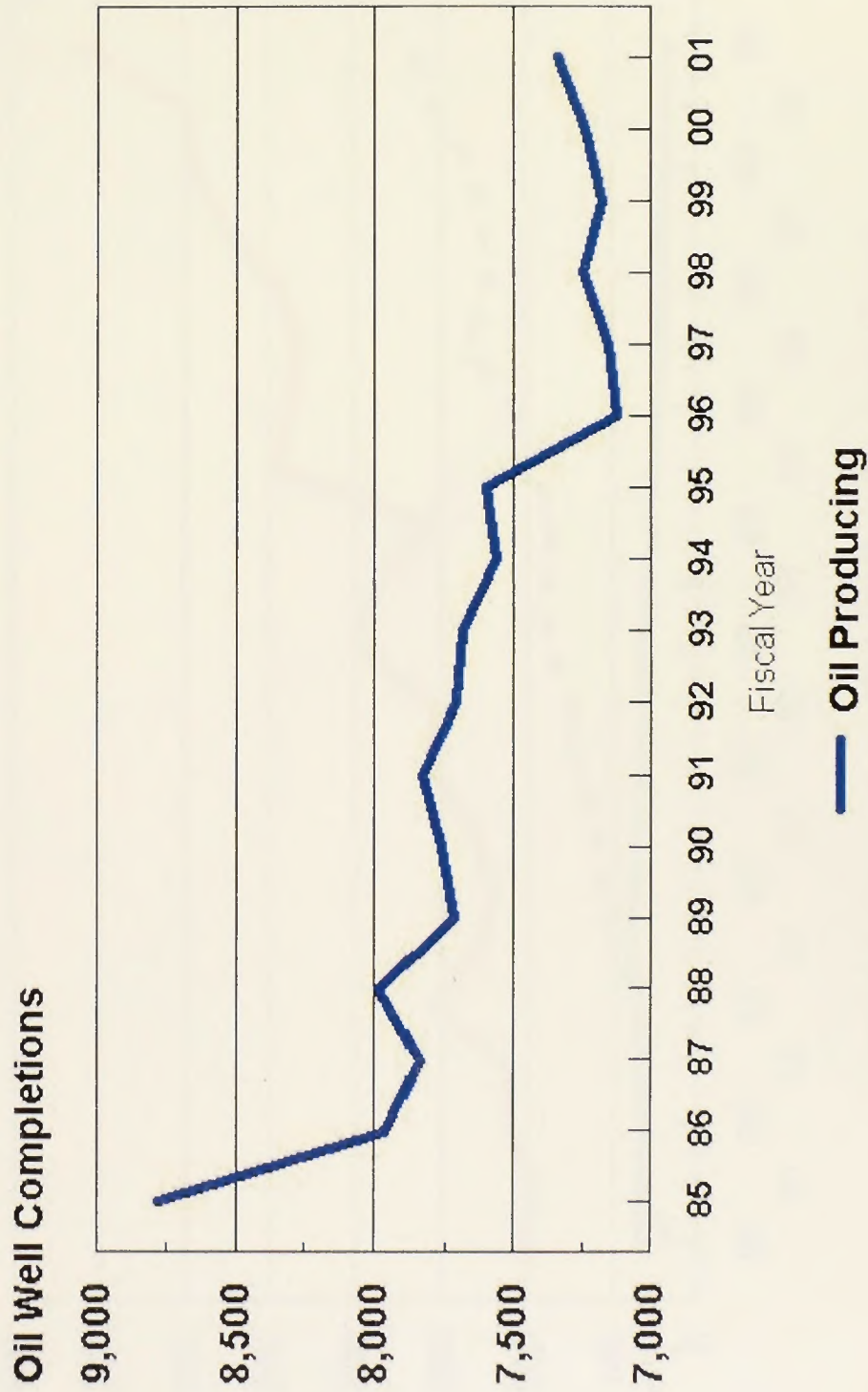
Oil And Gas Producing And Service Well Completions BLM Wyoming



Source: GFMRA Admin. Total (Fed & Ind) - WY, NE, MT, FY 98-01 AFMSS data normalized
EOFY 2001 data GSI=1011, OSI=684, Gas=5730, Service=2666

Figure 51

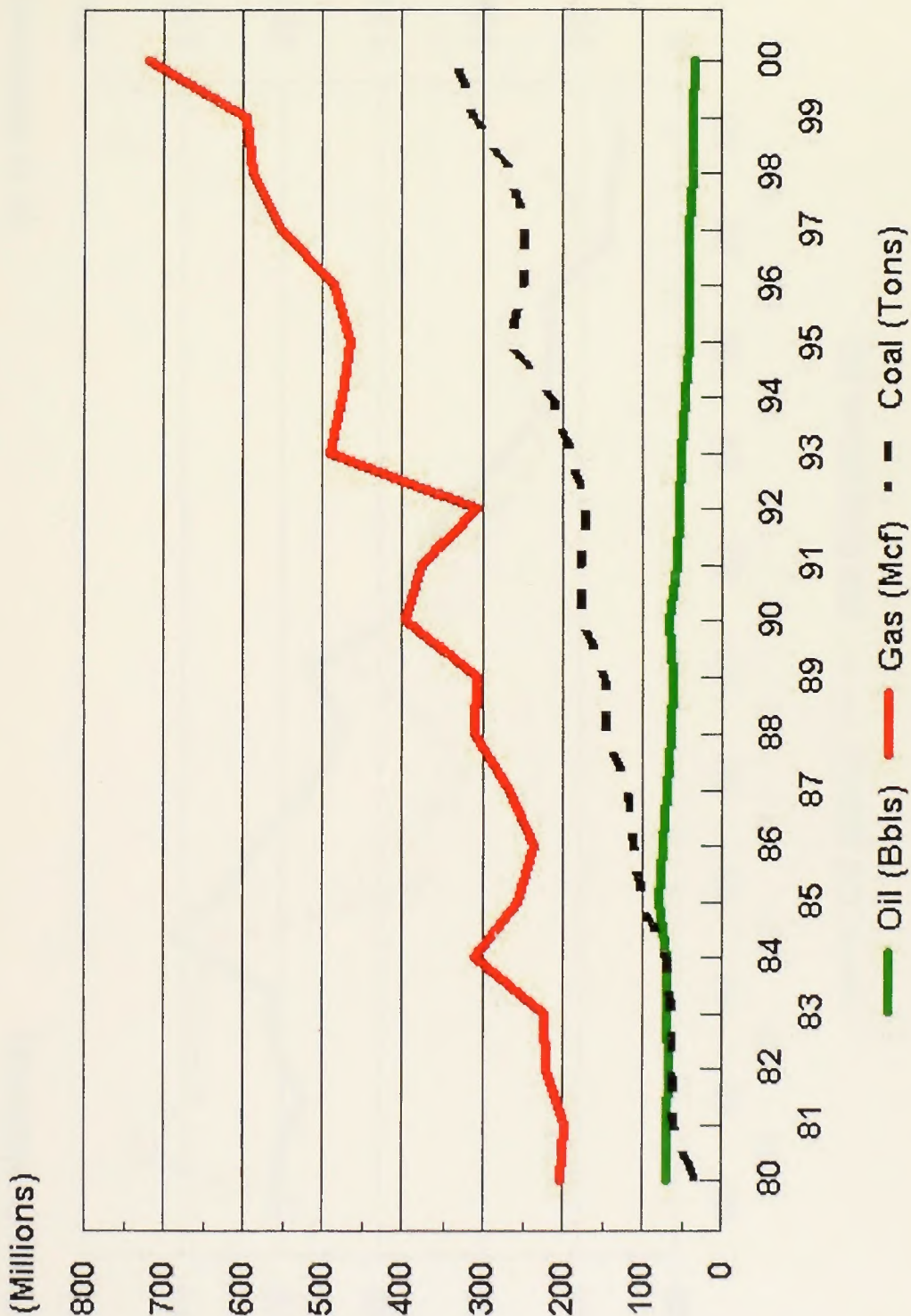
Oil Producing Well Completions BLM Wyoming



Source: QFMR Administrative Total - WY, NE, MT, FY 98-01 AFMSS data normalized
EOFY 01 = 7342 Oil Producing Completions, up 3% since EOFY 1996

Figure 52

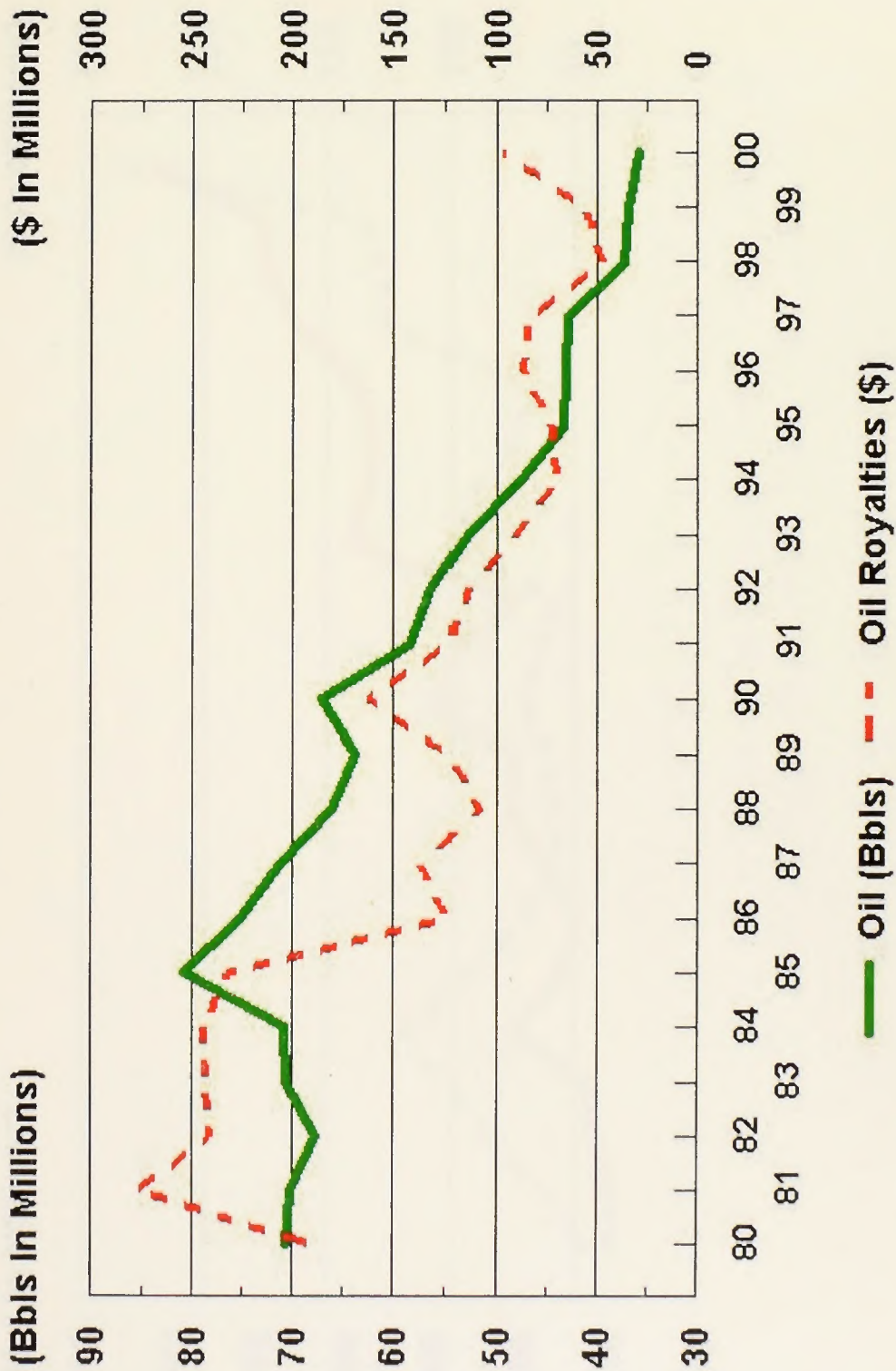
FEDERAL VOLUMES PRODUCED IN WYOMING



Source: MMS Minerals Revenue Reports, 2000 Report, Table 22, pg. 71

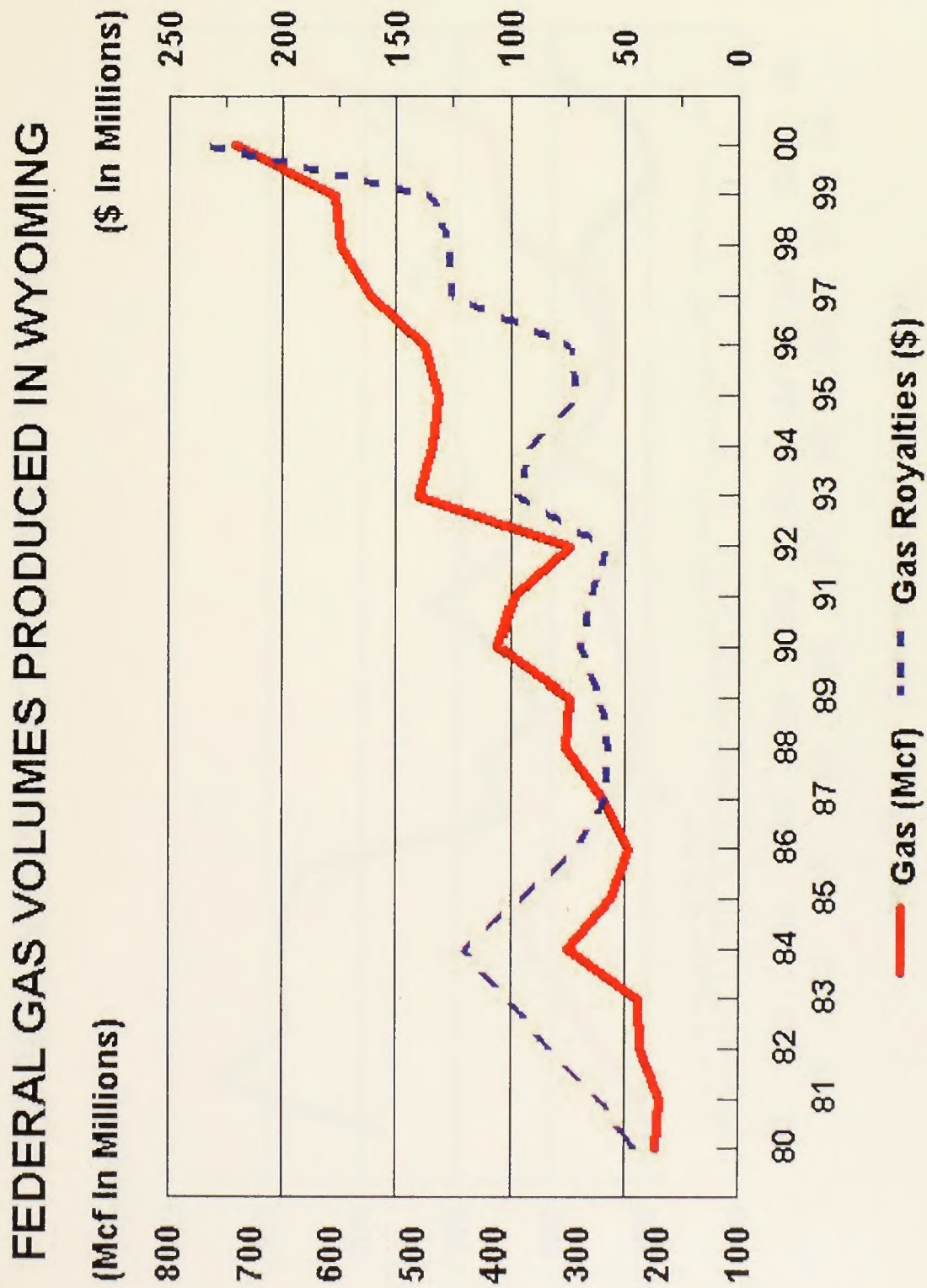
Figure 53

FEDERAL OIL VOLUMES PRODUCED IN WYOMING



Source: MMS Minerals Revenue Report 2000, Pg. 71
Total 1997=35.8 MMBO produced, \$96.8 MM royalty

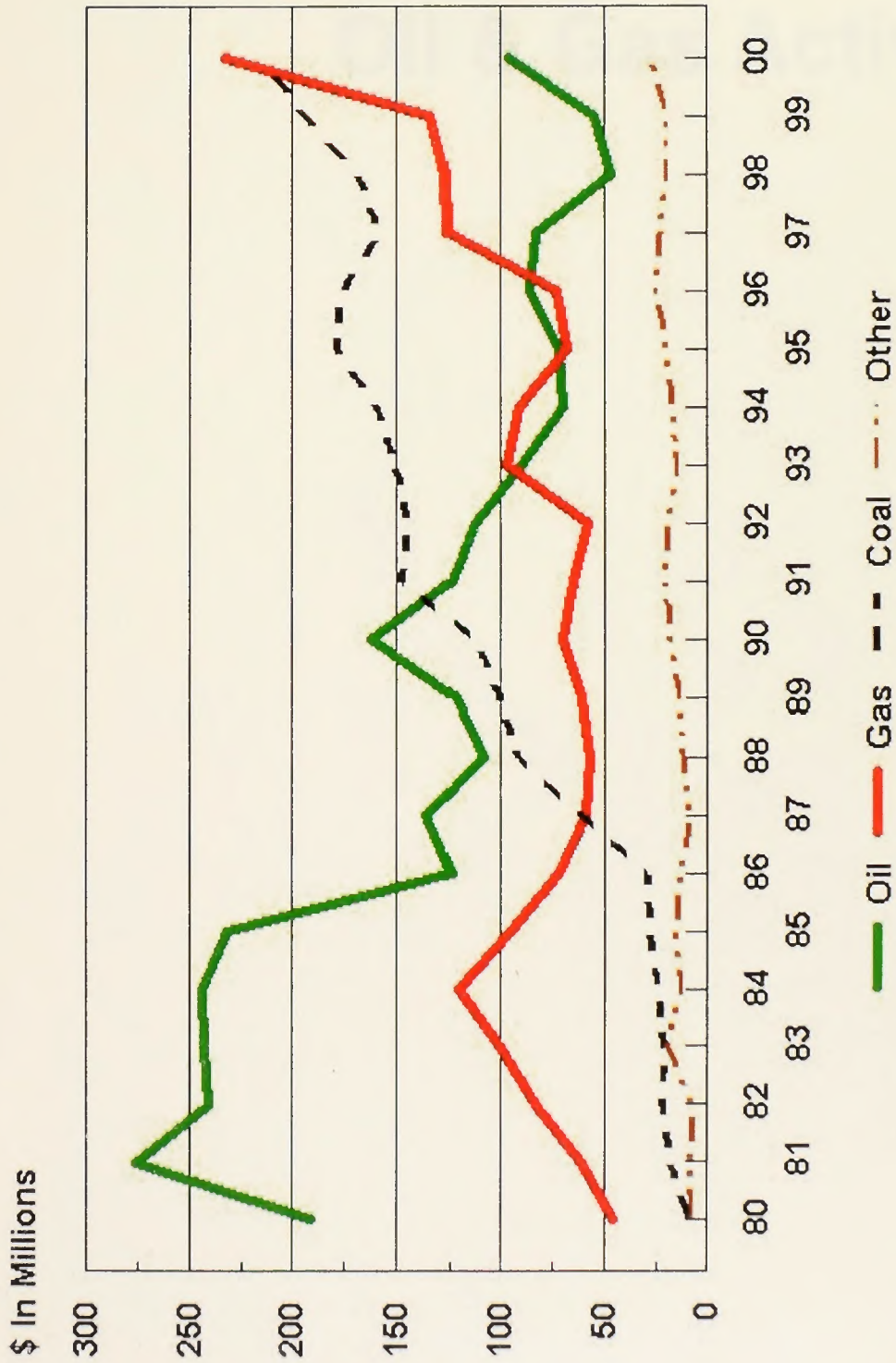
Figure 54



Source: MMS Minerals Revenue Reports 2000, Pg. 71
2000 = 718 Bcf produced, \$233.3 MM royalties

Figure 55

FEDERAL MINERAL ROYALTIES IN WYOMING



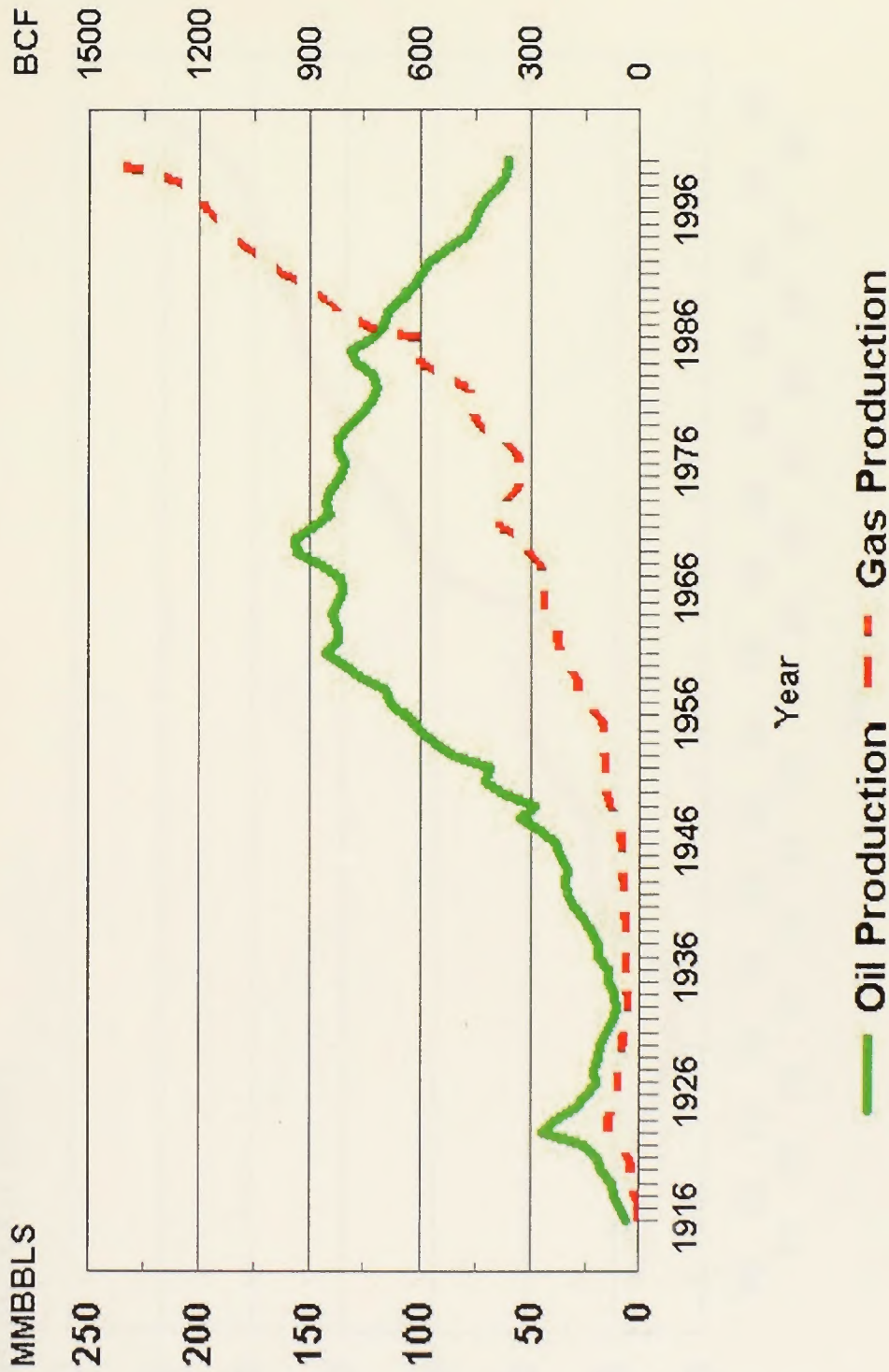
Source: MMS Minerals Revenue Report 2000, Table 22, Pg. 71
2000 Wyoming Federal Mineral Royalties = \$572.3 MM

Figure 56

State of Wyoming Oil & Gas Activity



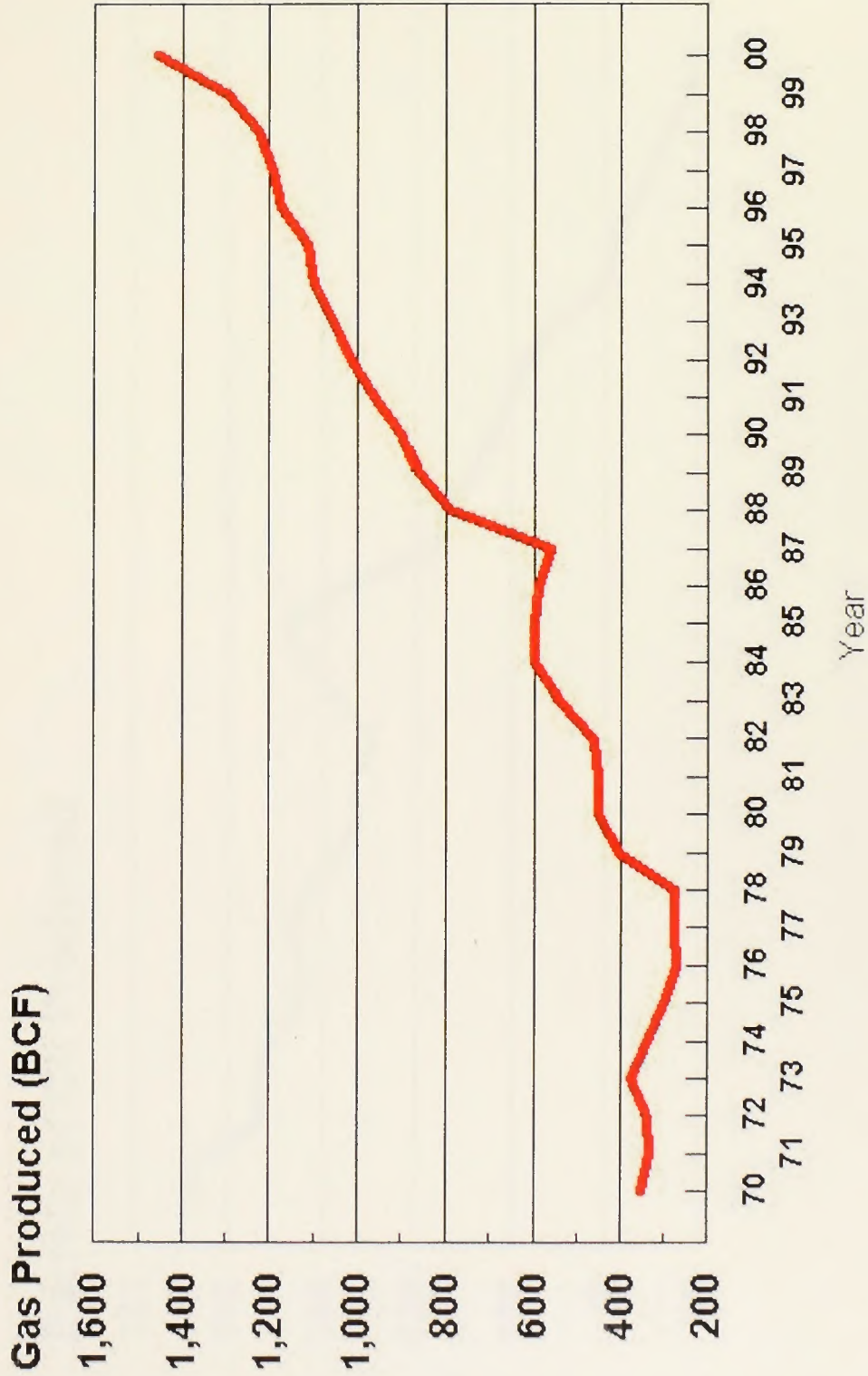
YEARLY WYOMING OIL AND GAS PRODUCTION



Source: WOGCC, (data through 2000)

Figure 57

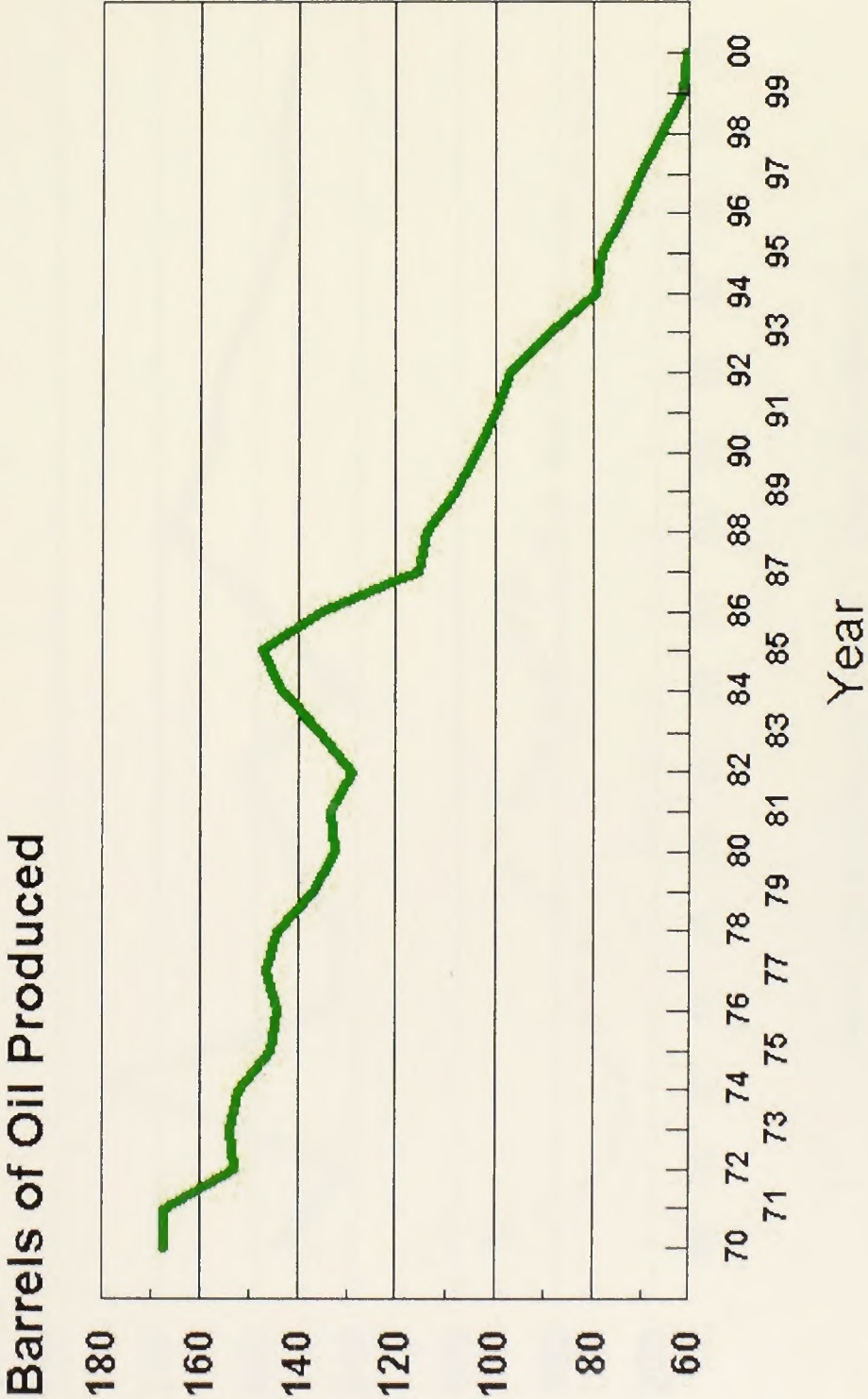
YEARLY GAS PRODUCTION IN WYOMING



Source: IOGCC Bulletin 12/90 and WOGCC Stat. Summaries
2000 Production = 1,454,793 MMCF

Figure 58

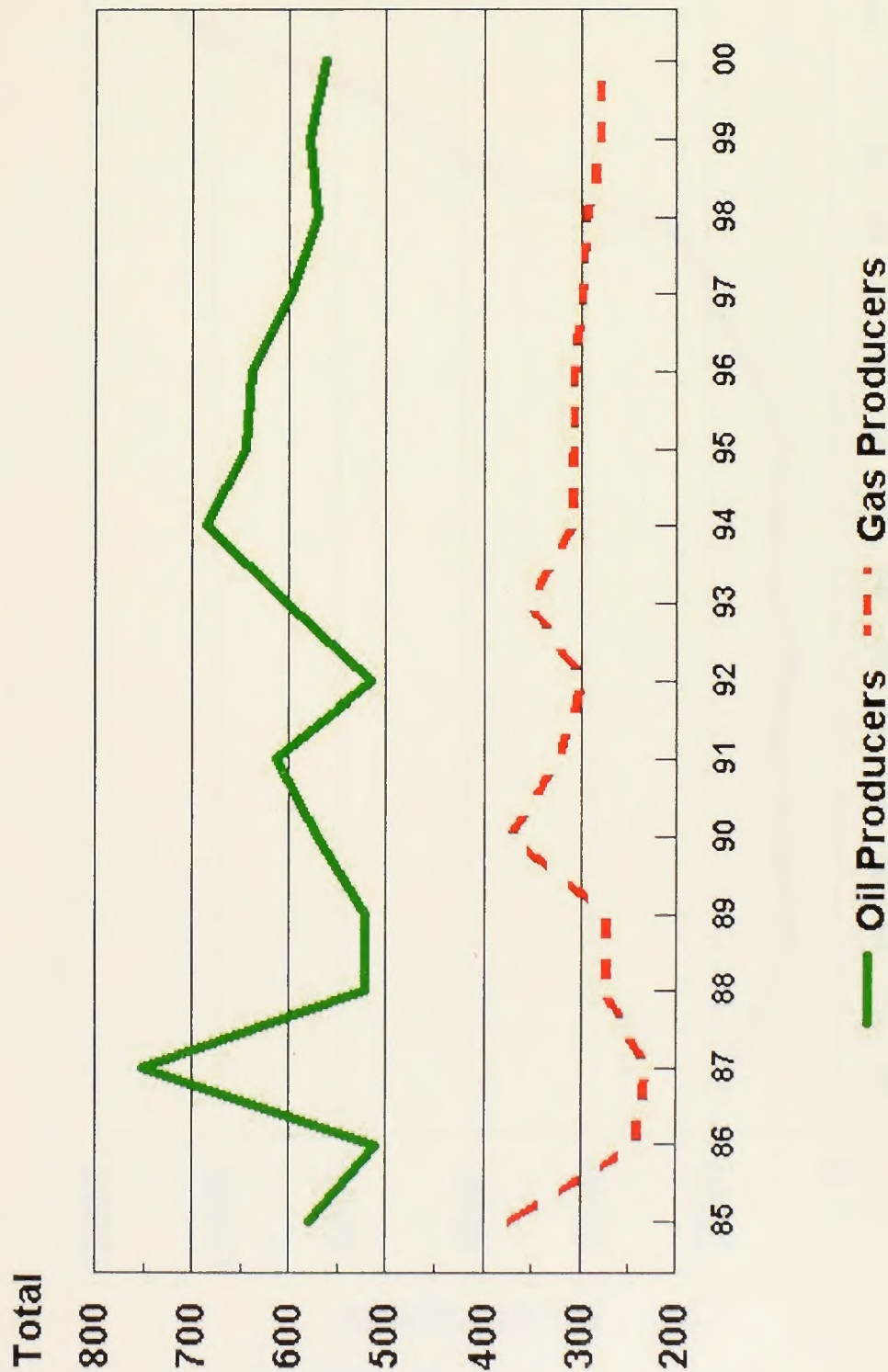
YEARLY OIL PRODUCTION IN WYOMING



Source: IOGCC Bulletin 12/90, WOGCC Stat. Summaries
2000 Production = 60,605,547 BBLs

Figure 59

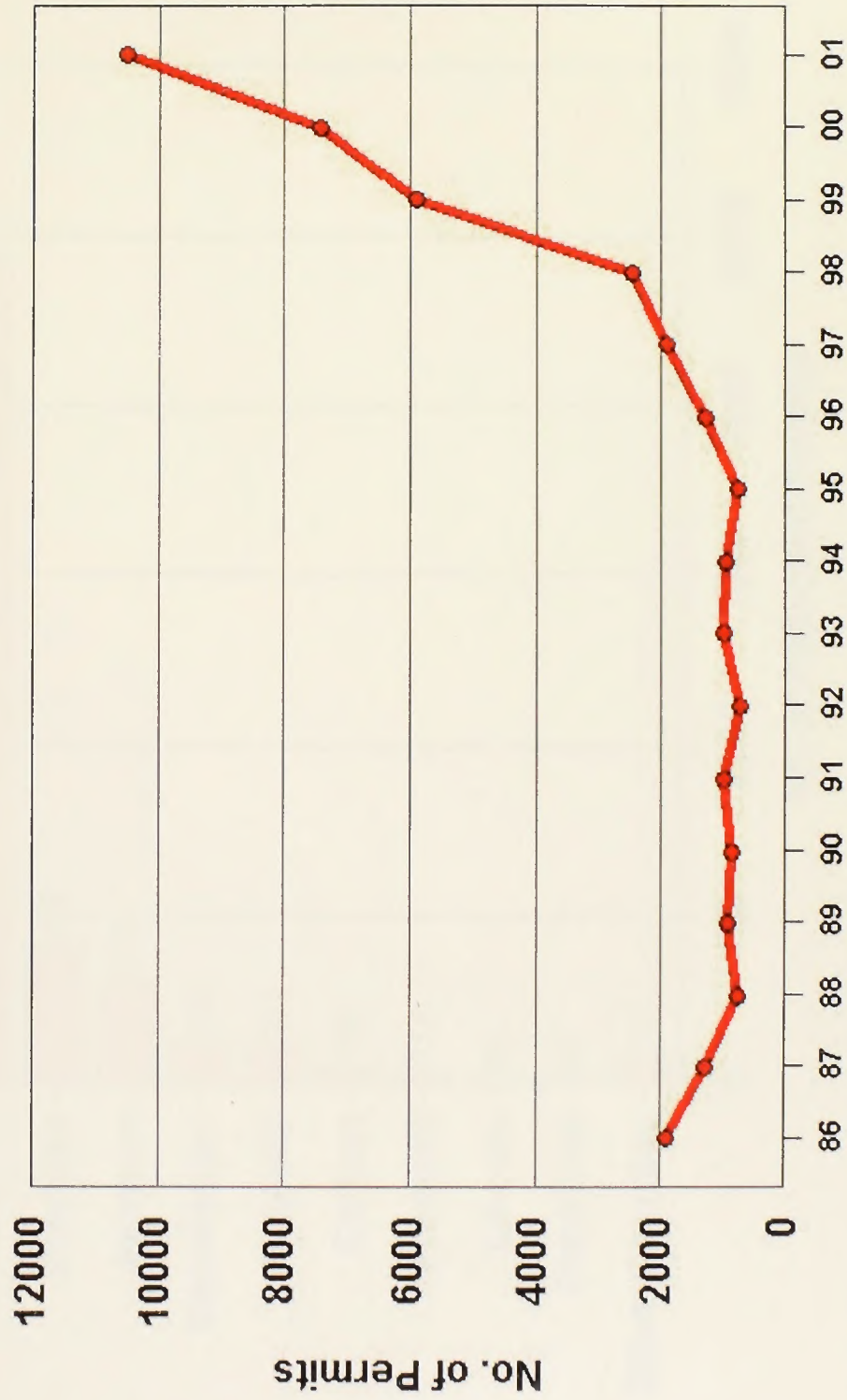
STATE OF WYOMING Number of Oil and Gas Producers



Source: Wyoming Dept. of Revenue, Annual Reports

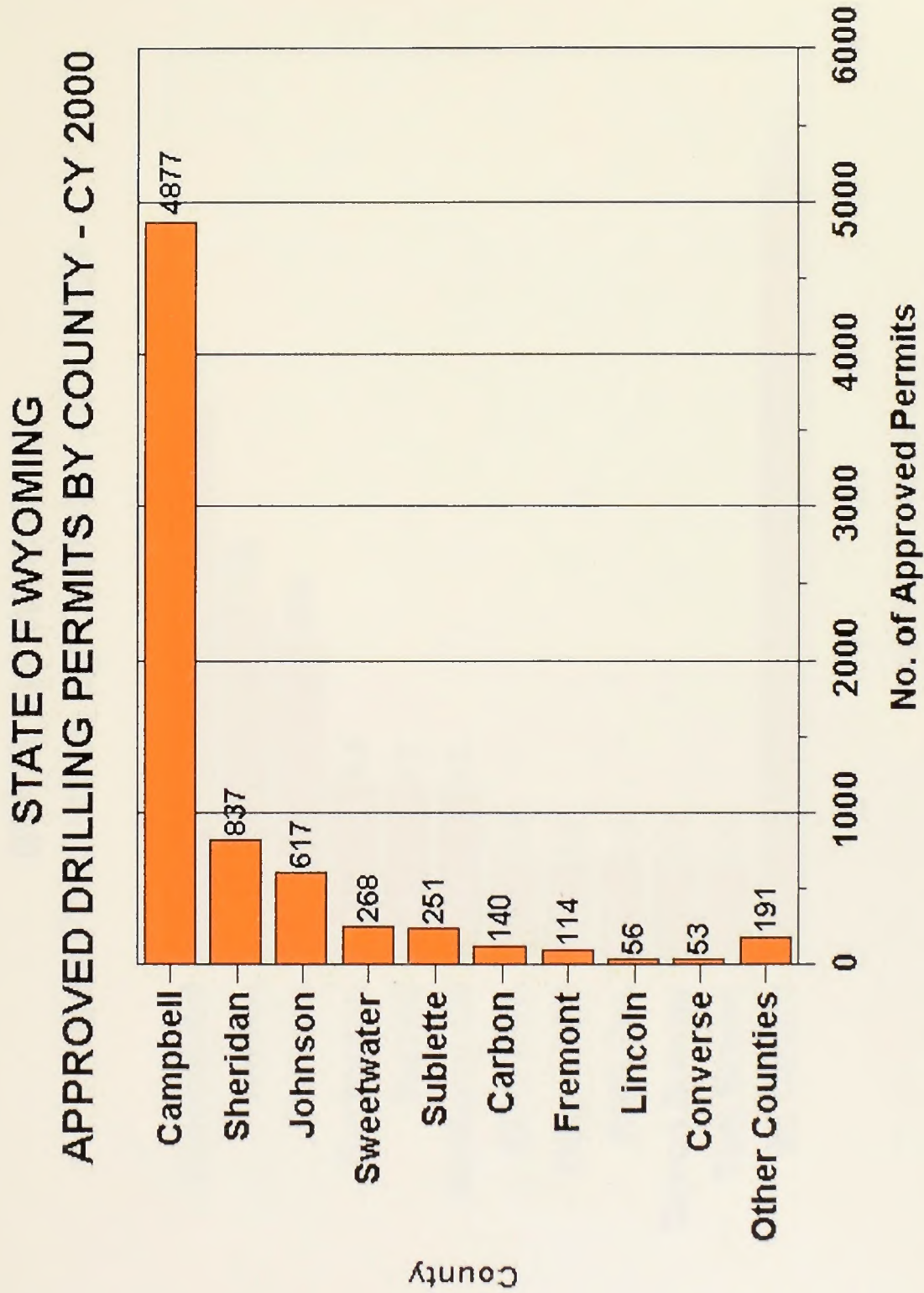
Figure 60

STATE OF WYOMING NUMBER OF APPROVED DRILLING PERMITS



Source: 2000 WOGCC Statistical Summary, Total 2001 (WOGCC internet site) = 10,514

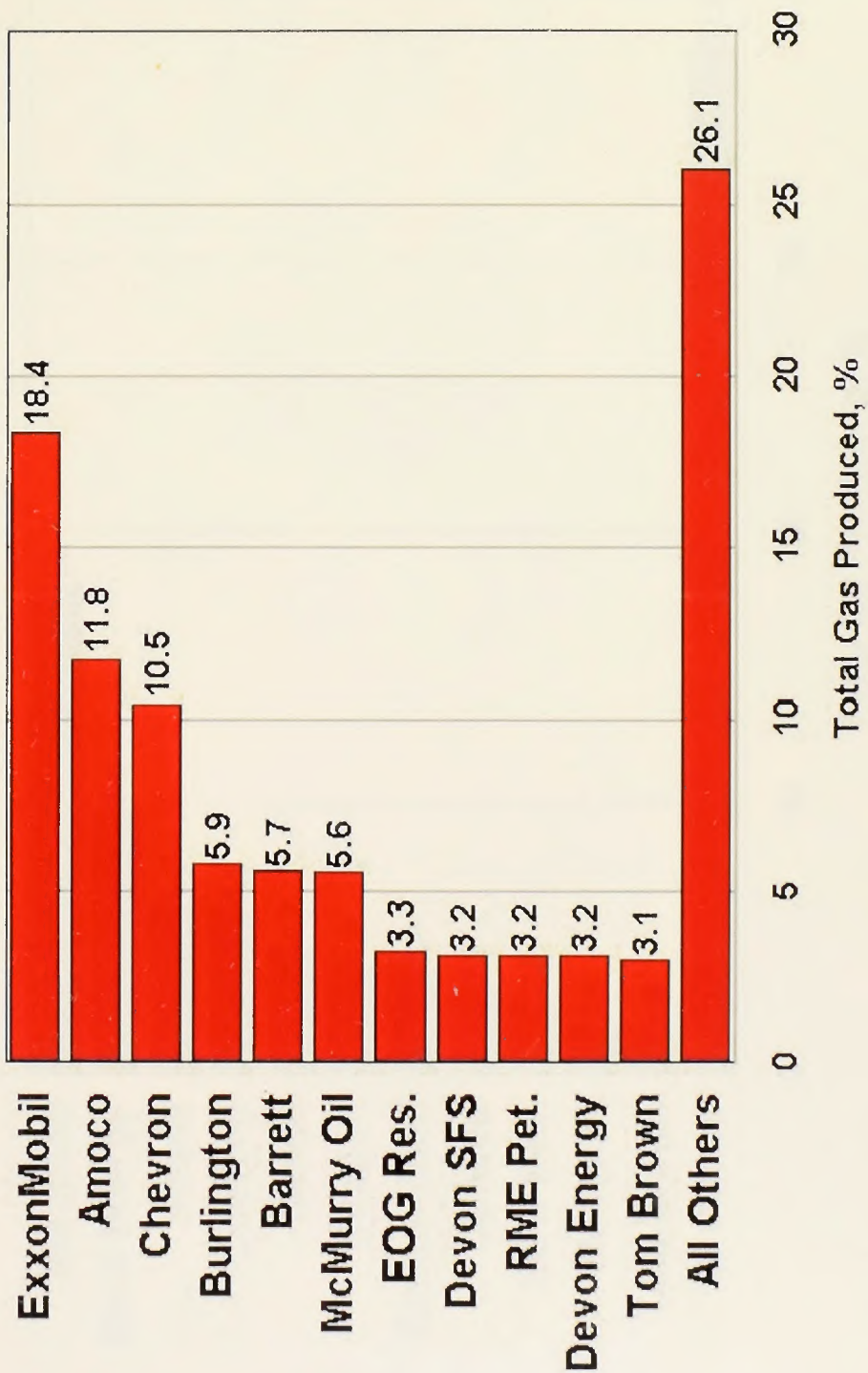
Figure 61



Source: 2000 WYOGCC Statistical Summary, Campbell County = 66%
2000 Total Approved Drilling Permits = 7,404

Figure 62

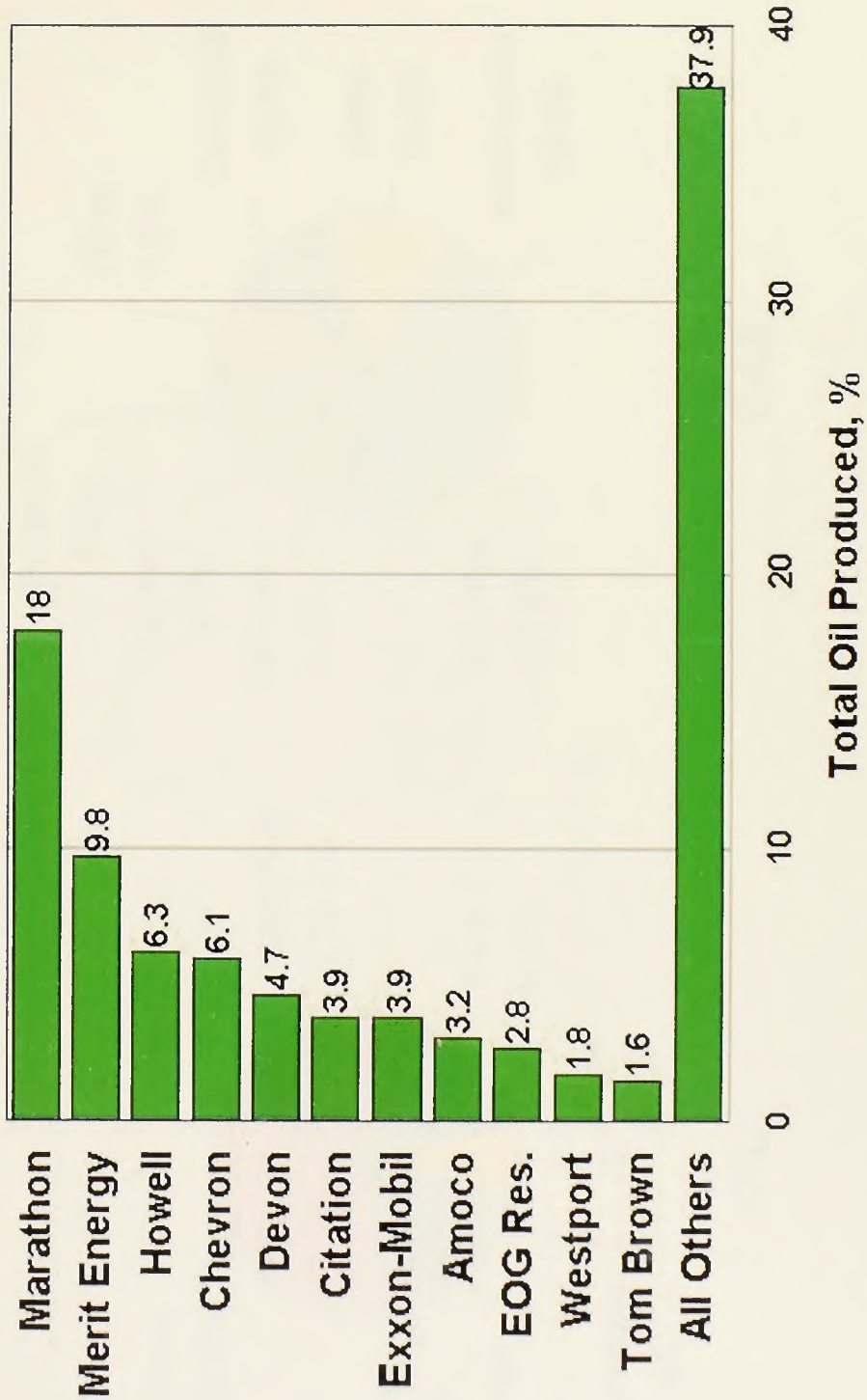
STATE OF WYOMING Gas Production By Operator - CY 2000



Source: WOGCC, 2000 Statistical Summary, pg. 39
Total Gas Produced = 1,455 BCF

Figure 63

STATE OF WYOMING Oil Production By Operator - CY 2000



Source: WOGCC, 2000 Statistical Summary, pg. 25
Total Oil Produced = 60.6 MMBBLs

Figure 64

STATE OF WYOMING OIL/GAS PRODUCTION % BY COUNTY

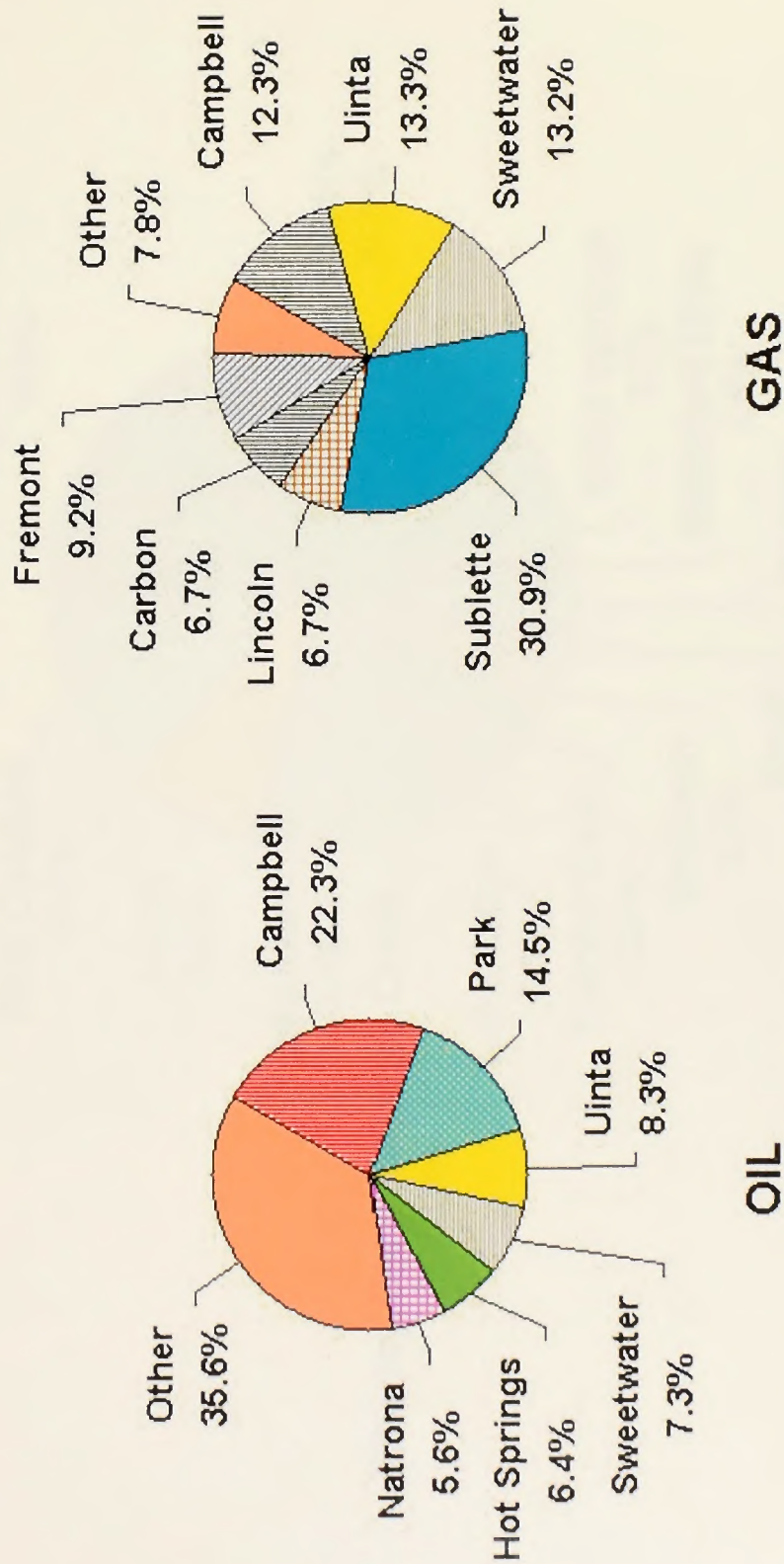
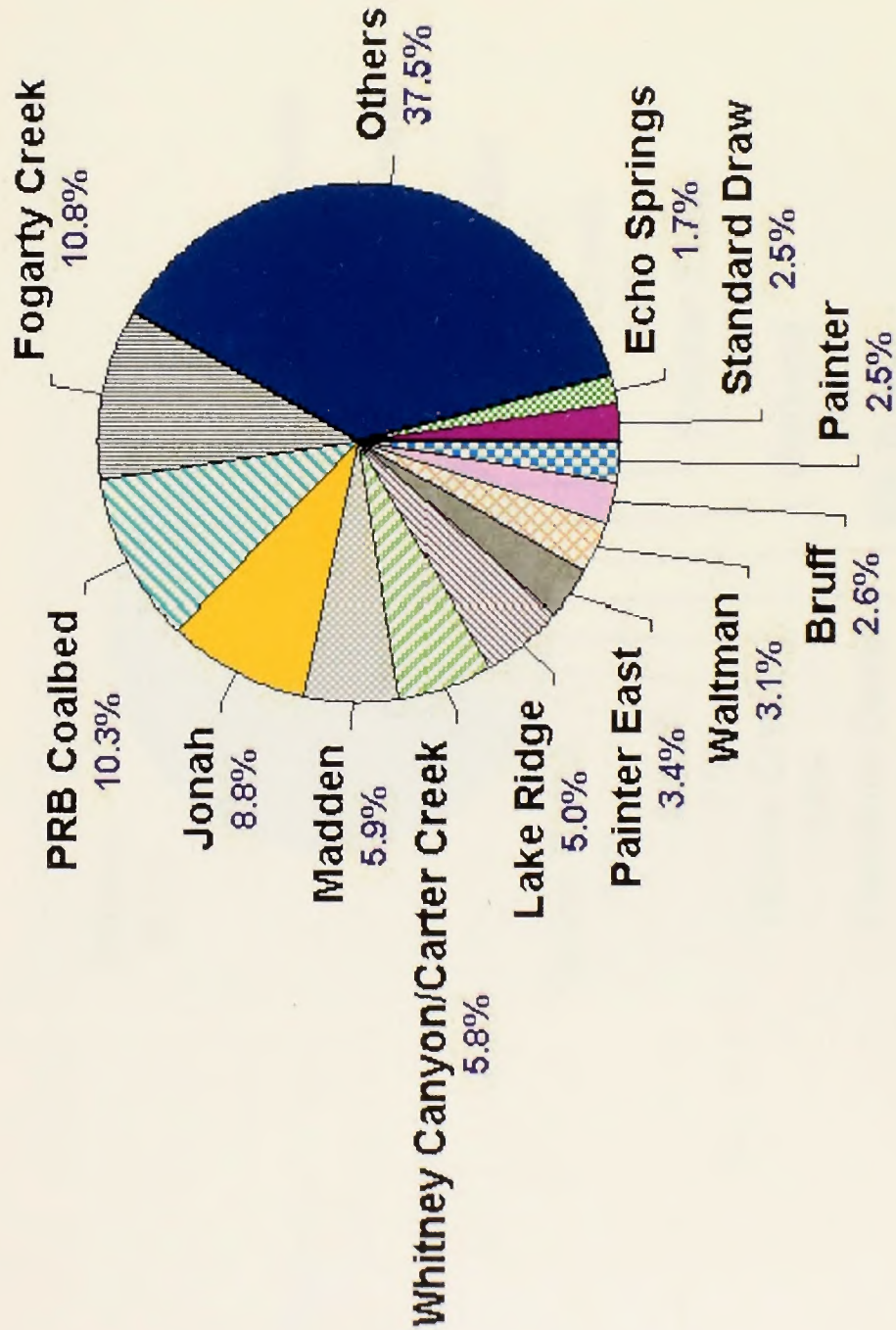


Figure 65

Source: 2000 WOGCC Statistical Summary

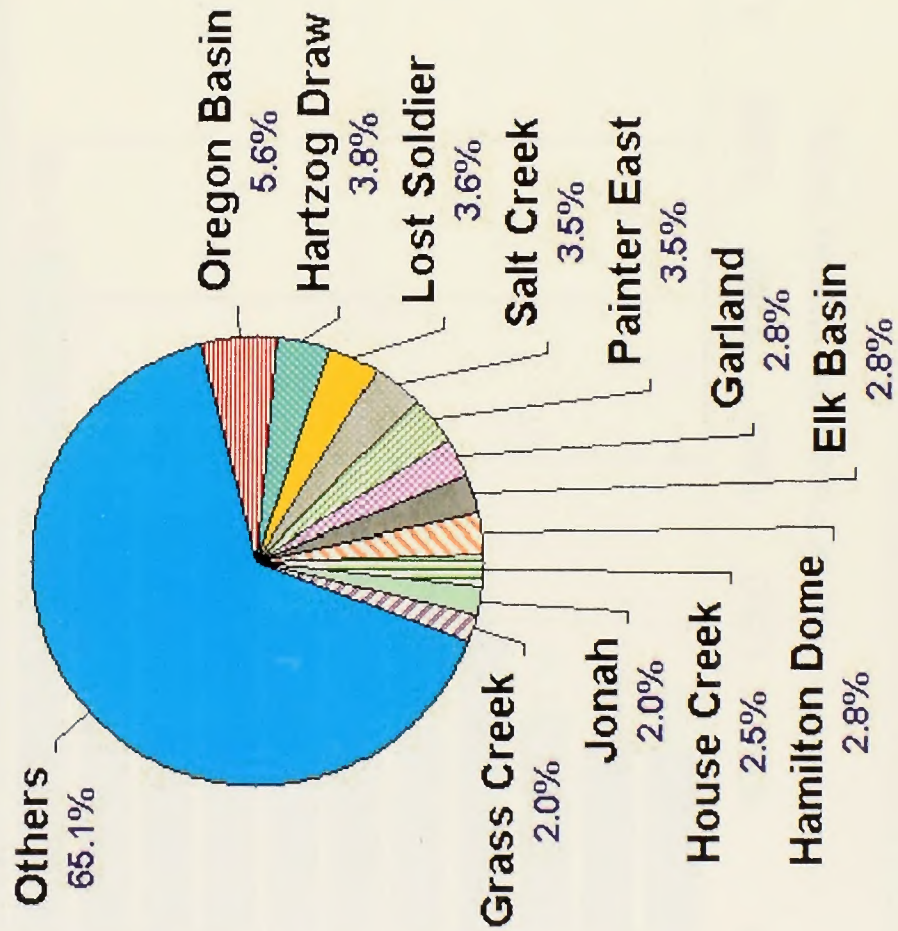
STATE OF WYOMING LARGEST PRODUCING GAS FIELDS IN 2000



Source: WOGCC 2000 Statistical Summary, pg. 64
Fog. Crk/Lake Ridge include CO₂, Helium, & N₂, Bruff-N2

Figure 66

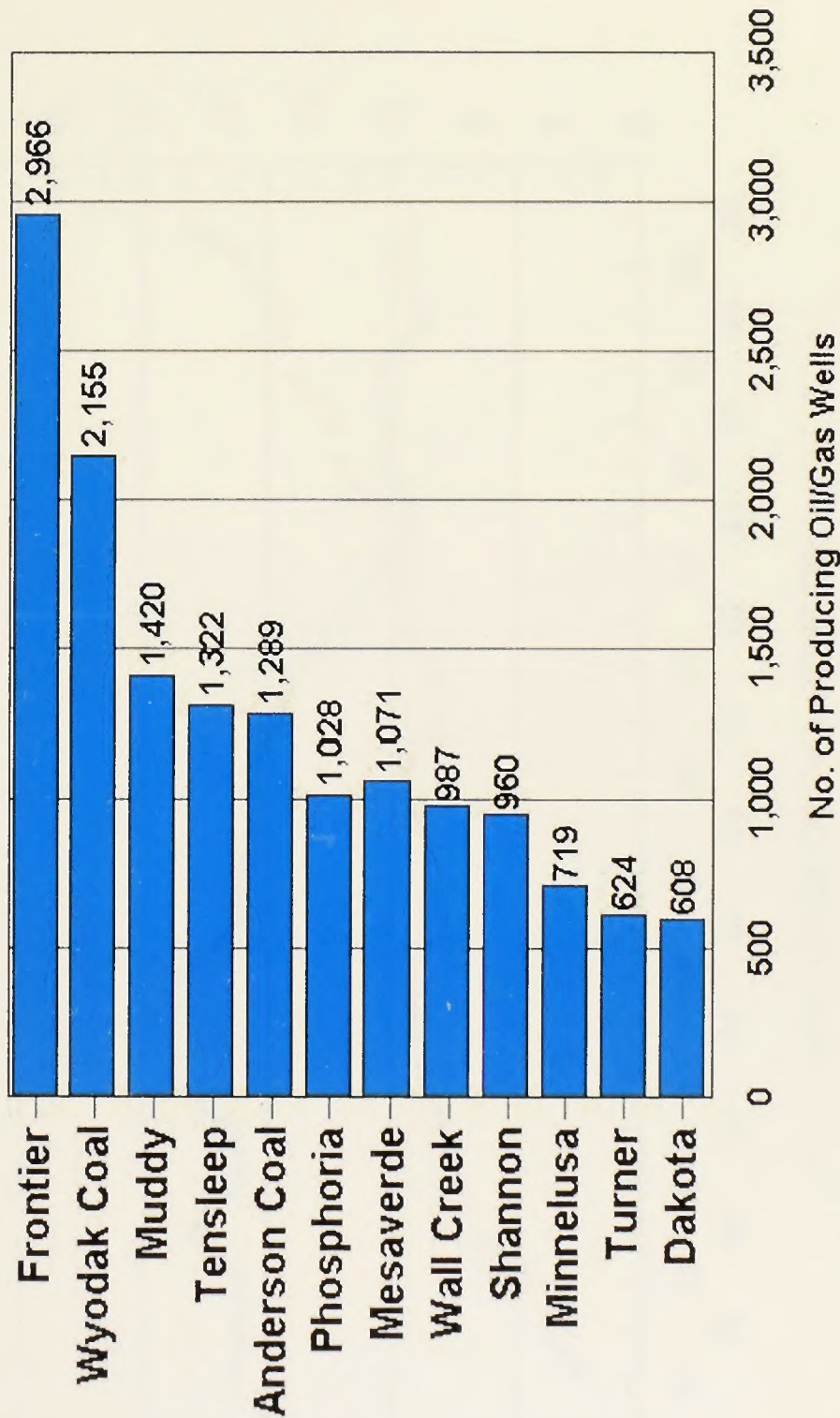
STATE OF WYOMING LARGEST PRODUCING OIL FIELDS IN 2000



Source: WOGCC 2000 Statistical Summary, pg. 63

Figure 67

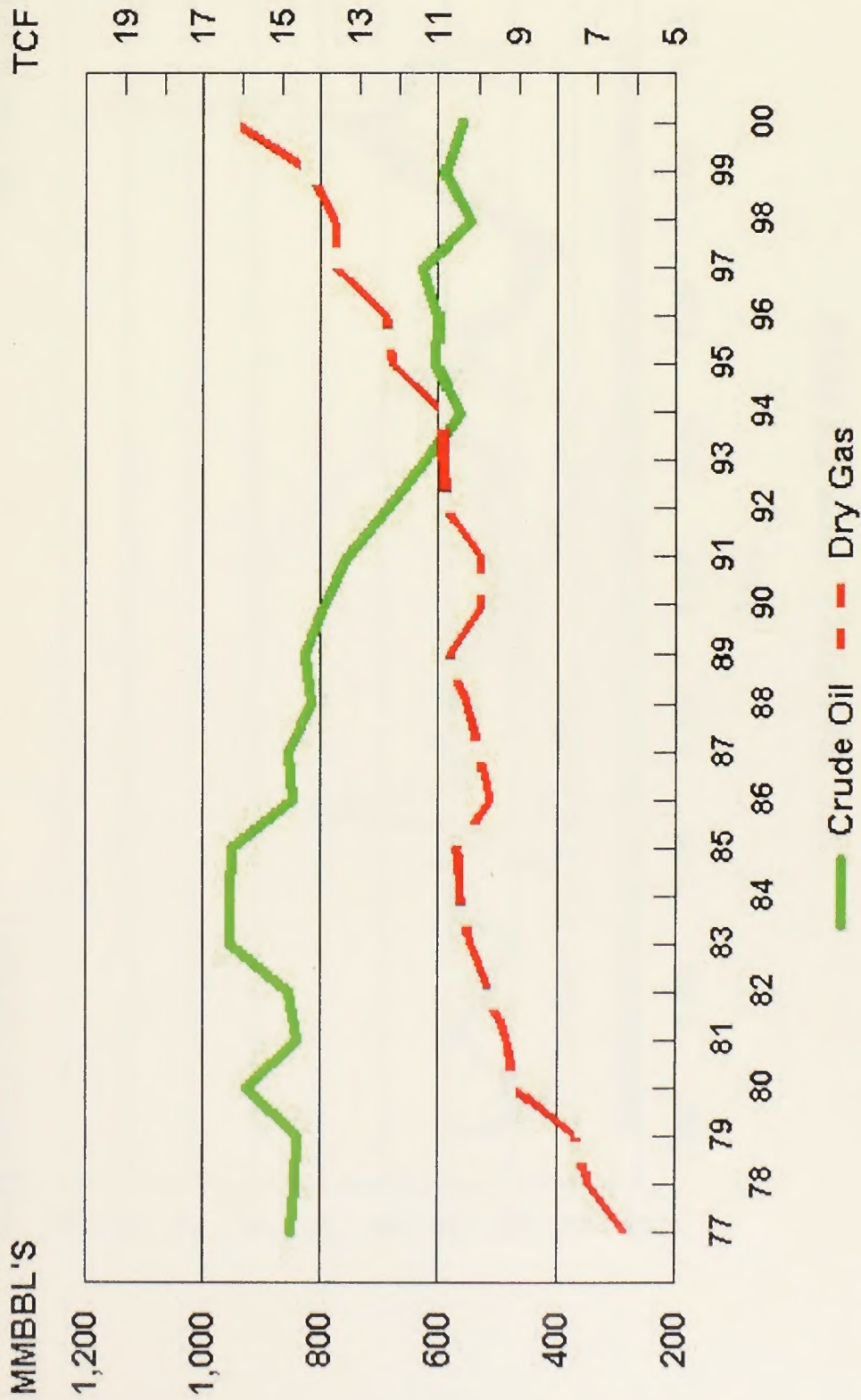
STATE OF WYOMING OIL/GAS WELLS PRODUCING IN RESERVOIR (TOP 12)



Source: 2000 WOGCC Statistical Summary, Total producing wells = 28,772
Reservoir name may include other formations or sand members.

Figure 68

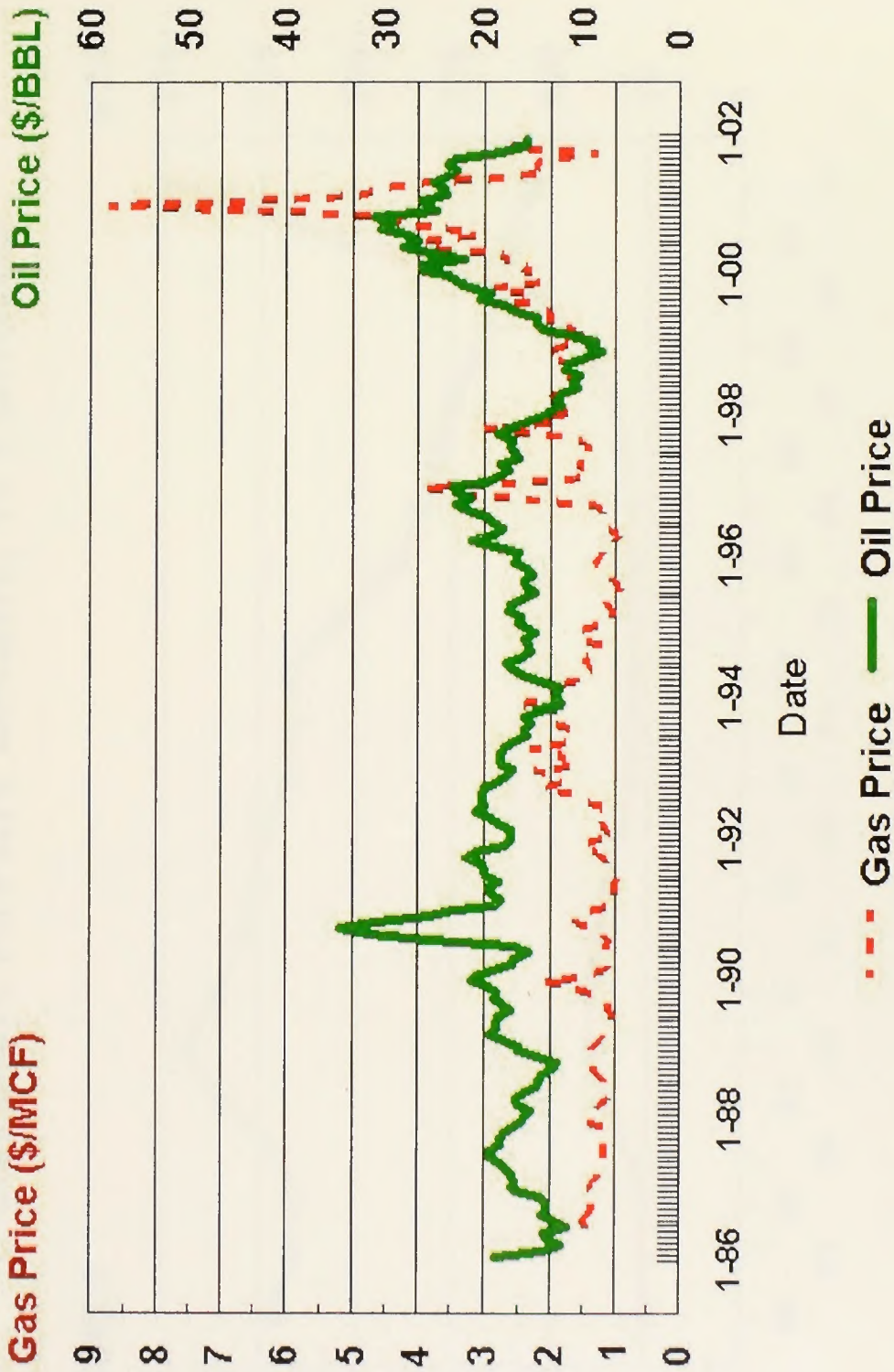
PROVED RESERVES - WYOMING



Source: DOE/EIA-0216(00) report, Tables 6, 8 & 13. NGL's for WY & UT are combined since 1982
12/31/00 = 16.1 Tcf, 561 MMBBL's, 947 MMBBL's NGL

Figure 69

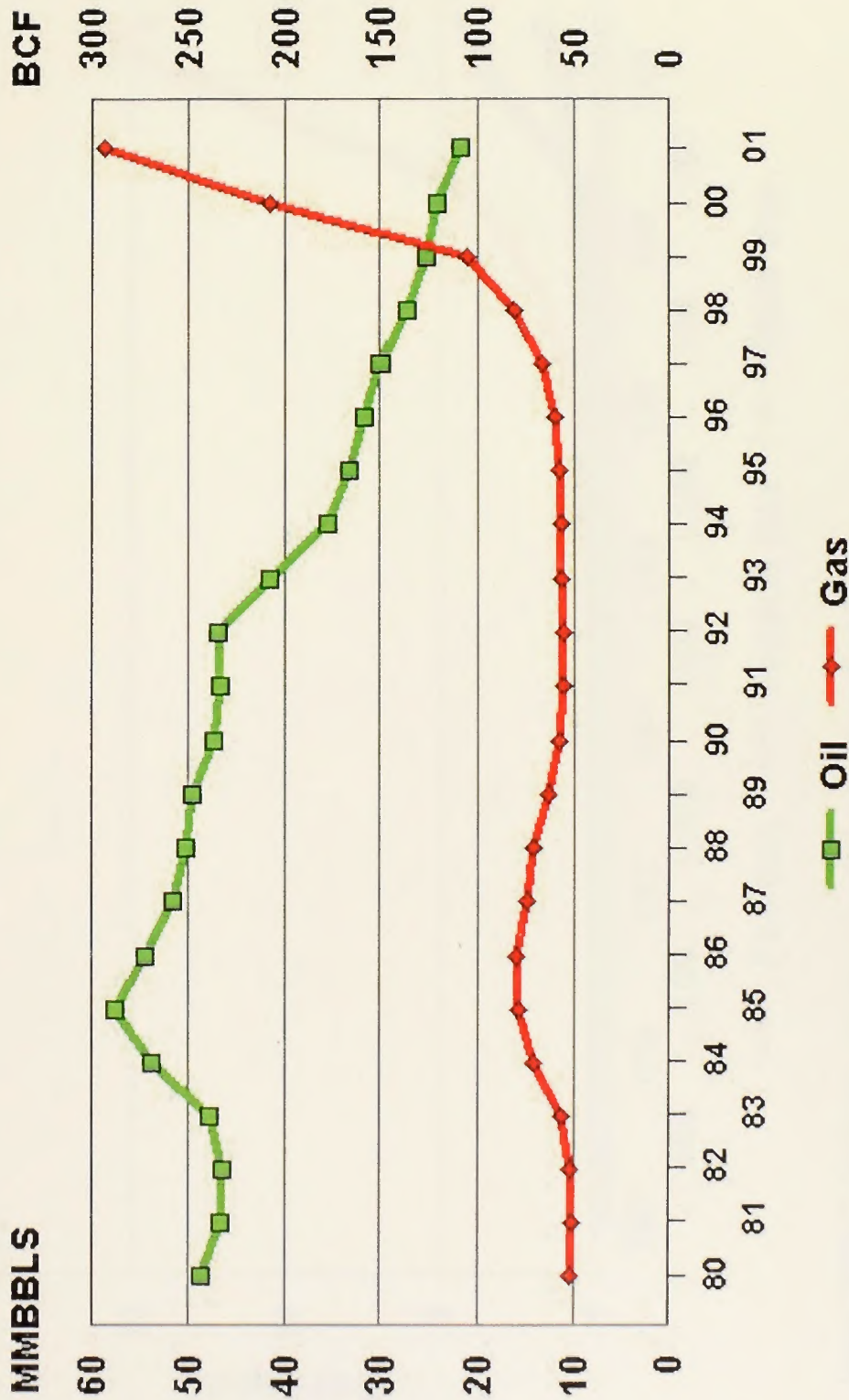
WYOMING MONTHLY OIL AND GAS PRICES



Spot Natural Gas Prices - Opal, Wyoming, Prices thru 12/01
Marathon Oil Price Bulletin, 7/86 - 5/98, Amoco SW Sweet posting after 6/98.

Figure 70

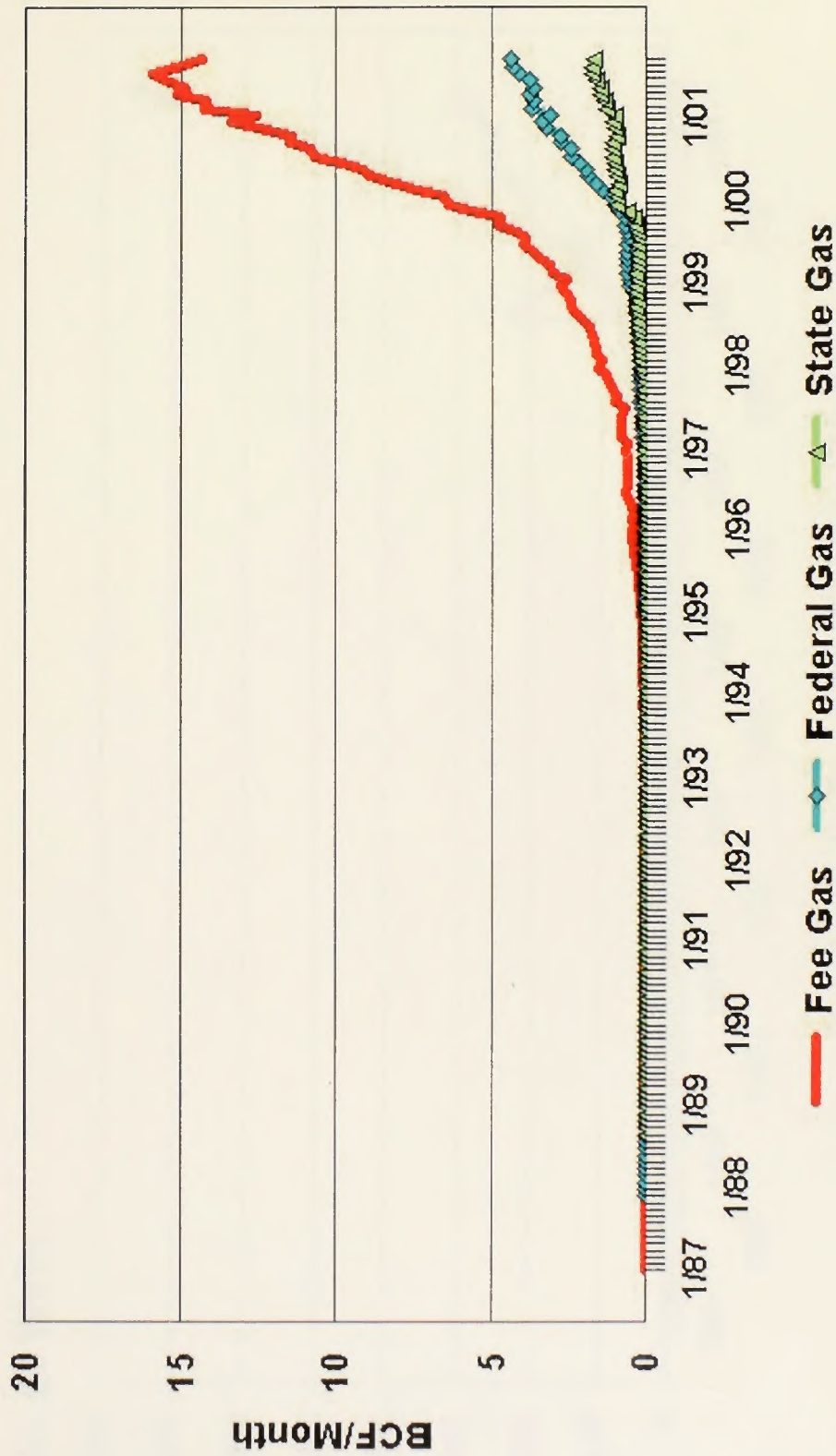
ANNUAL OIL AND GAS PRODUCTION POWDER RIVER BASIN, WYOMING



Source: WOGCC website, 2001 data estimated

Figure 71

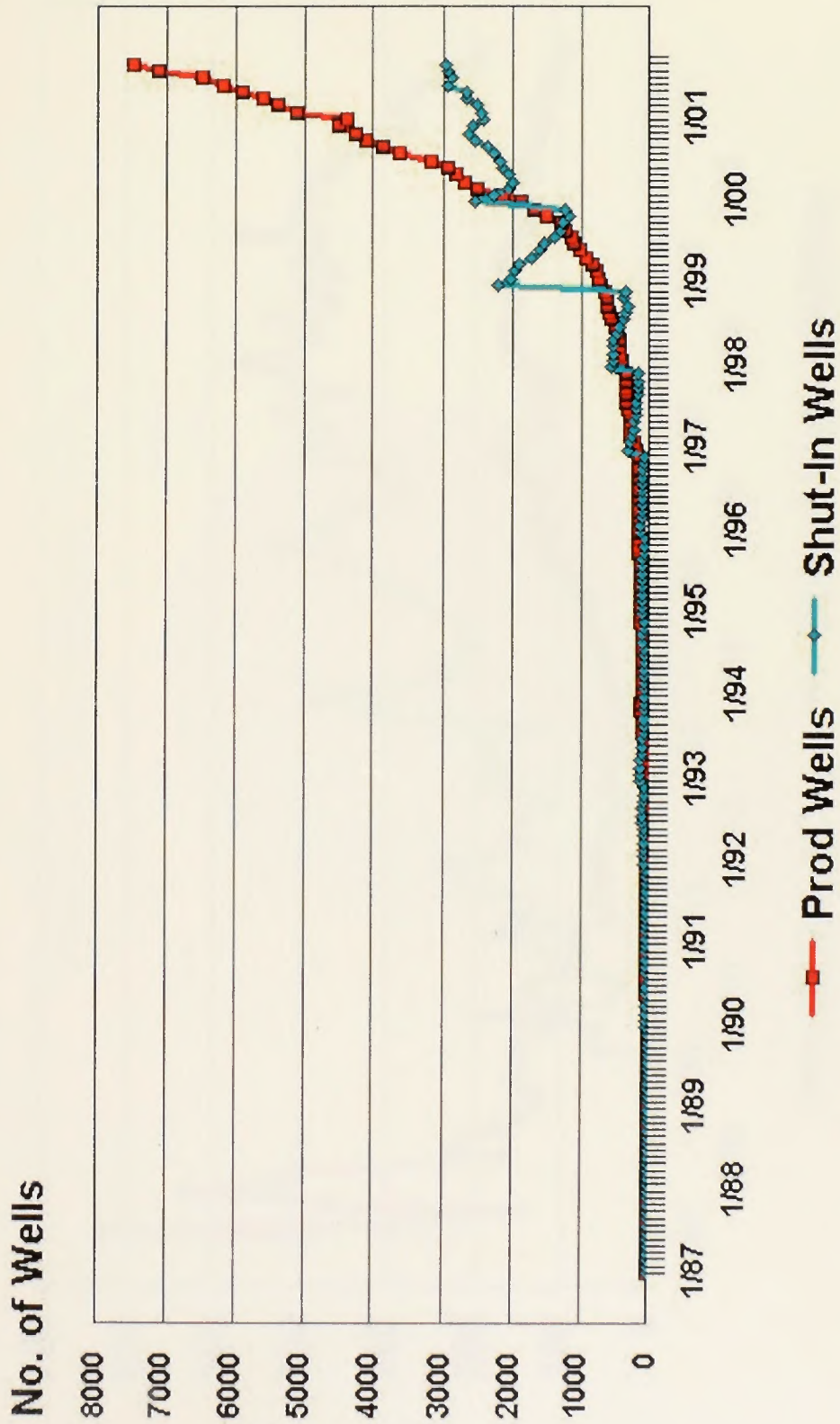
WYOMING COALBED METHANE PRODUCTION



Source: WOGCC, <http://wogcc.state.wy.us/coalbedchart.cfm> as of 1/14/02
 Month of October, 2001 = 4,429,553 Mcf Fed., 14,297,436 Mcf Fee, 1,749,552 State
 Total (not sales) CBM Monthly Gas = 20,476,143 Mcf (70% fee, 22% Fed., 9% State)

Figure 72

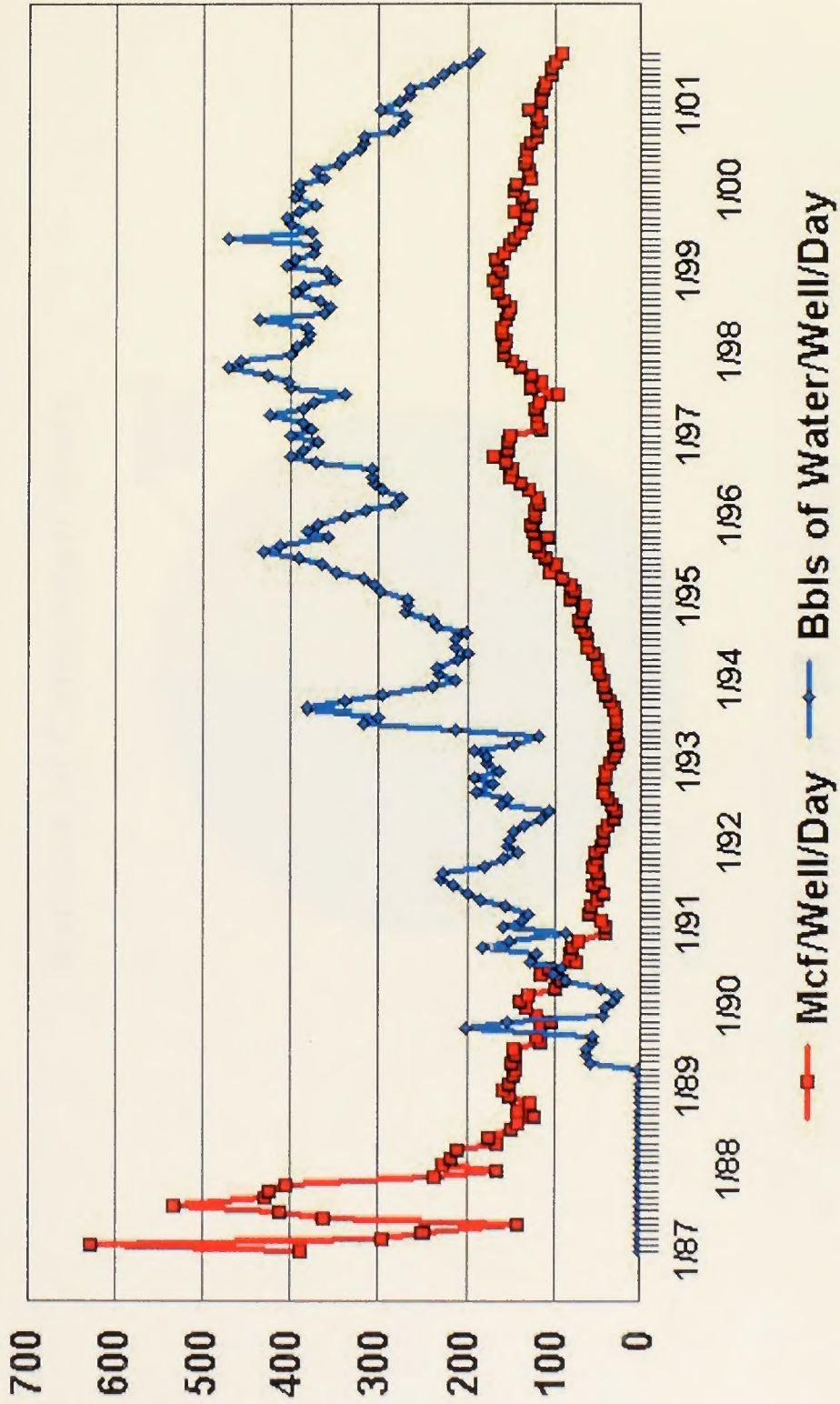
WYOMING COALBED METHANE PRODUCTION



Source: WOGCC internet site, data as of 1/4/02
9/01 = 7,491 prod. wells, 2,983 shut-in wells

Figure 73

WYOMING COALBED METHANE PRODUCTION

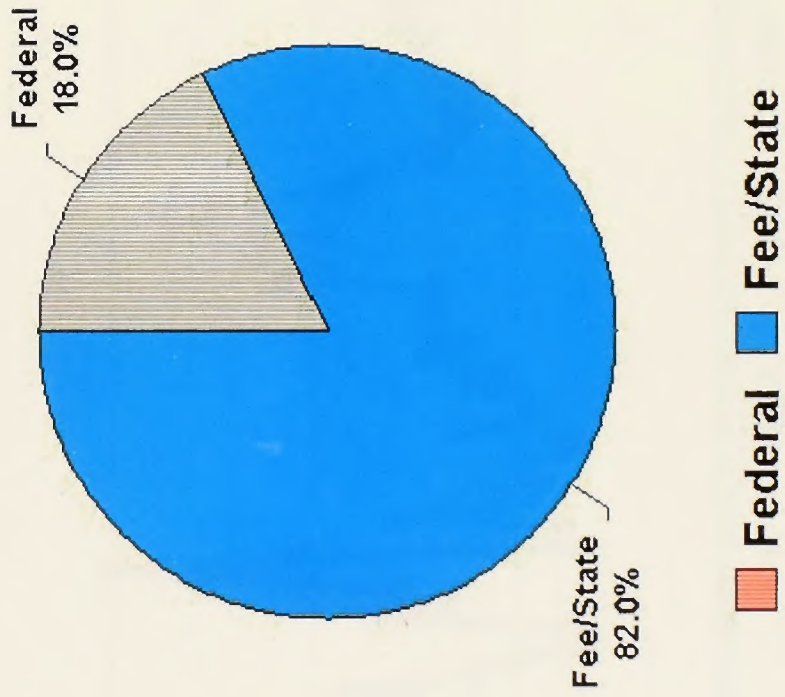


Source: WOGCC internet site, data thru 9/01
9/01 = 92 Mcf/well/day, 188 bbl water/well/day

Figure 74

WYOMING COALBED METHANE ACTIVITY

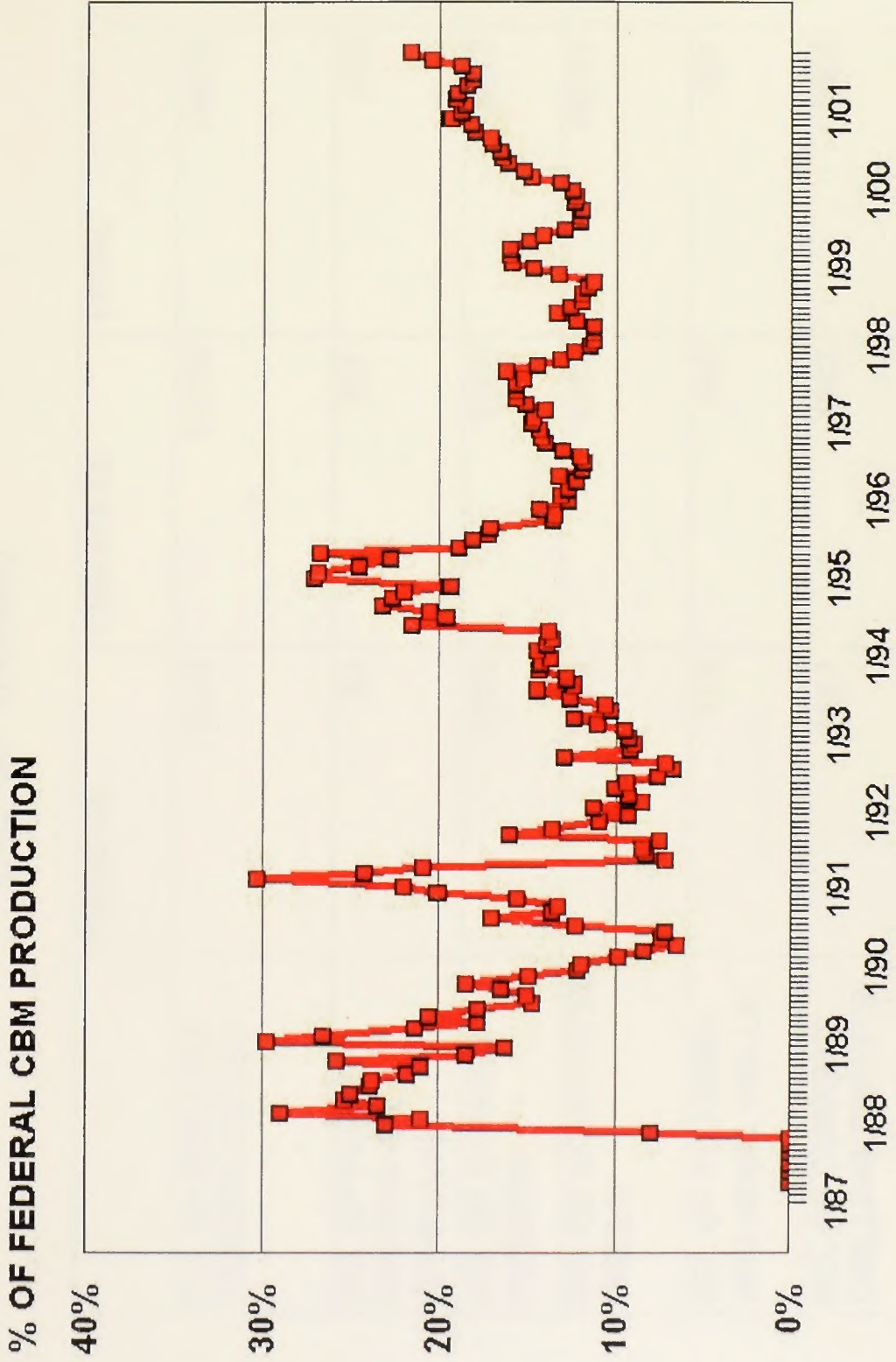
Number of Completed Wells



Source: WOGCC internet site as of 1/4/02
Fee/State wells = 8,788, Federal wells = 1,923

Figure 75

WYOMING COALBED METHANE PRODUCTION



Source: WOGCC internet site, data thru 10/01.

Figure 76

**WYOMING COALBED METHANE ACTIVITY
(AS OF 1/04/02)**

	FEDERAL	FEE/STATE	TOTAL
NO. OF DRILLING PERMITS ISSUED	5939	17734	23673
NO. OF PERMITS WAITING ON APPROVAL	62	547	609
NO. OF EXPIRED PERMITS	1909	3068	4977
NO. OF COMPLETED WELLS	1923	8788	10711
NO. OF PLUGGED AND ABDN. WELLS	118	483	601
NO. OF CURRENT DRILLING PERMITS	1552	4132	5684

Figure 77

